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Remarks upon the Ordinary Form of Bessemer Ingot Cranes.*

BY GRAM CURTIS.

The crane most generally met with in our Bessemer works is shown in Fig. 1. It is top-supported and has a hollow cylindrical mast of cast iron, made in three pieces. The top and bottom pieces are carefully turned, each with a tapered end which fits a turned socket in the corresponding end of the middle piece. The top piece passes through a block in the roof, which forms the top support to the crane. The bottom piece is made the plunger of the hydraulic cylinder at the base, and the middle piece carries the wrought-iron gib and tie-rods. It is the purpose of this paper to follow the principal strains developed by a load upon such a crane, call attention to some weak points of the mast, and to suggest another, and in some respects a better, form of mast and cylinder. Referring to Fig. 1, and also to Fig. 2, which shows merely the axis *a b* of the mast with the forces acting upon it, *a* is point of lateral support to mast at cylinder; *b* is point of lateral support to mast at block in roof; *c* and *d* are the projections upon the axis of mast of the pins in tie-rods. The weight of the gib with its load tends to revolve the mast toward itself, and for a given load this tendency is obviously greatest when the load is at the outer end of the gib.

Avoiding as far as possible, in the body of this paper, the mathematical formulæ, which will be found in the appendix, let us assume that a certain weight, *W*—which includes the weight of the gib and ties, &c.—placed at the outer end of the gib, is the greatest load that can be safely borne by the crane. *W* then creates the force *P* at *c*, and the force *P'* at *d*, and these forces in turn develop the resistances *p'* at *a* and *p* at *b*, and we may therefore neglect the gib and tie and consider the mast as a beam held at rest by the forces *p*–*P'*–*P* and *p'*, and these forces, by tending to distort the mast, tax its strength.

In order to get the full use of the mast it ought to be taxed up to its safe limit, but at no place beyond it. In Fig. 2 the lines x–x, x'–x', x''–x'' are the lines of the safe elastic limit of the mast, constructed from formulæ which may be found in the appendix; that is, the length of the perpendicular distance from any point in the axis of the mast *a b* to this line gives the measure of the resistance to bending which the mast will offer at that point when the extreme tensile strain upon that cross-section of the mast is 5000 pounds per square inch—the limit to which it is deemed safe to expose cast iron. We notice at the points *t* and *t'*, where respectively the top and the bottom pieces are abruptly reduced from 13 inches diameter to 12 inches diameter, that the elastic resistance (see x') is considerably reduced. It is here 750,248 inch-pounds; therefore the distorting tendency of the forces *p*, *P'*, &c, or the bending moment, as it is called, must not be at this point greater than the above amount. Now, the weakest position of this mast is when it is at its extreme upper point of stroke; *t'* is then 123 inches from the force *p'*, and hence *p'* multiplied by 123 inches must equal 750,248 inch-pounds, from which it follows that *p'* must be 6100 pounds. By means of *p'* and formulæ given in appendix, we find that *W* is 6521 pounds, and deducting for the weight of gib, tie-rods, &c., their weight reduced to end of gib, 1891 pounds, we have left 4630 pounds as the extreme load which may be safely handled by this nominally 10-ton ingot crane, with a total lifting power of 39,810 pounds under 300 pounds hydraulic pressure. From this total lifting power, deducting

	Pounds.
Weight of mast (calculated)	8950
" jib, &c. "	3268
Friction at *a* and *b* (33 % × *p*)	4066
" in stuffing-box (say)	4000
Making a total of	20,284

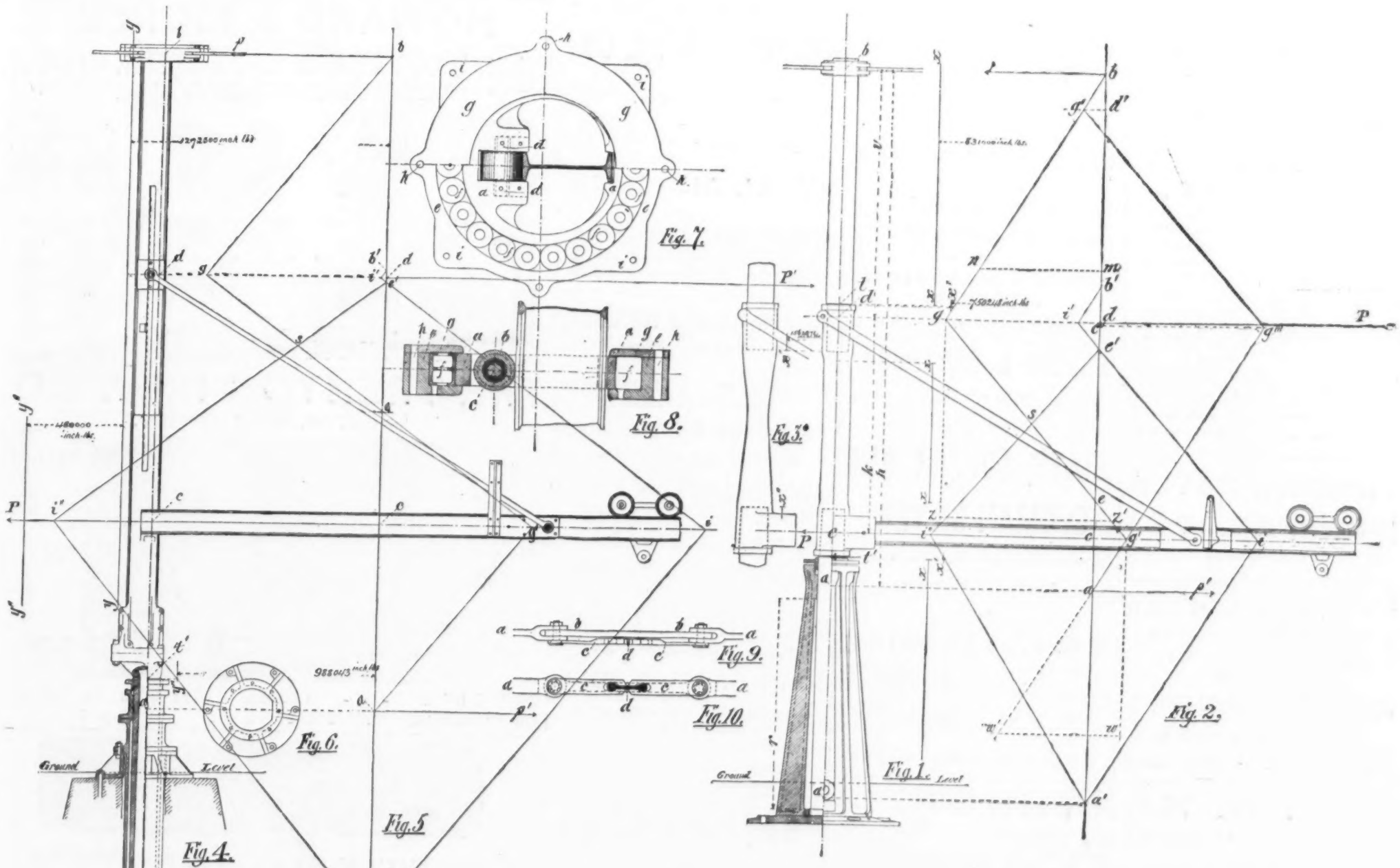
We have left 19,526 pounds with which to lift 4630 pounds—that is, the extreme load that can be safely handled is not quite 24 per cent. of the capacity of the crane.

This reduction in the diameter of the mast is certainly a very unnecessary, and at the same time a very serious, error in the design of the crane. Worse places for these reductions could not have been selected, and the error seems to have been copied into many, if not most, of the ingot cranes in use. The breaking of these cranes at one of the places referred to (generally at the upper point *t*) is not an unusual occurrence, and in view of the danger, the maximum load, in at least one of our Bessemer Works, has been limited to 3 tons (which is, however, more than the safe limit), and in all the Bessemer works large loads on these cranes are handled very cautiously. By forming the top and the bottom pieces as shown in Fig. 3, merely carrying the full diameter 13 inches, all the way, and, as soon as the length of stroke will permit, slightly enlarging the mast before it enters the socket, the net load which may be handled with safety will be increased to 6697 pounds—a gain of over 44 per cent. Having obtained the value of *p*, we can by means of formulæ, given elsewhere, construct the lines of bending moments. This construction is shown in Fig. 2. When the crane is down *g b* is the line of moments for the upper part of mast *d*, *b*, *g g'* is the line of moments for the middle part *d e*, and *g' a* is the line for the lower part *a c*. It will be noticed that the line *g g'* intersets the axis *a b* at *e*, locating a section of the mast at which there is no bending strain.

When the crane is in its highest position, *b g''* becomes the line of moments for the upper part, *g'' g'''* the line for the middle part, and *g''' a* the line for the bottom part. Transferring these lines to their proper position relative to Fig. 1, we see that the point of no flexure, or the neutral section of the mast, has traveled some distance up the mast during its stroke. We also find, as might have been expected, that the elastic strain sustained by any cross-section of the mast varies considerably during the stroke. Combining the two sets of moment lines we get *a'-i''-s-g-b*, the diagram for determining the form of a mast of uniform strength to safely sustain the load *W* at the outer end of the gib. It gives the maximum bending moment to which each cross-section of the mast is subjected by this load at some one time during a full stroke. This may now be compared with the lines of elastic resistance $x-x$, x, &c., and it can at once be seen at what points the mast is strong and at what points weak. The small moment at *s*, with the moments increasing above and below it, calls for a middle piece of the shape given in Fig. 3, and shows how unnecessary is the strengthening of this part of the mast by heavy ribs, as is sometimes done, especially in ladle cranes. Before speaking of the modified form of mast for a crane of the type we have been considering, I wish to call attention to the conflicting character, or, to say the least, the independent character, of some of the elements which are to be combined in determining the size of its various parts,

1. The length of the gib. This, with the load, creates the bending strain on the mast, and with the second element, the stroke of the crane, it determines the diameter of the ram, thus fixing the lifting area to be acted upon by the third element—namely, the hydraulic pressure. Any two of these being given, the third practically becomes prescribed within certain limits, in order that the crane shall not be overtaxed or broken down by its own lifting power. If, however, they are all fixed, we may, or we may not, be able to construct a crane that shall be safe under the greatest load it can lift. In the case we are about to consider, all of these elements have been fixed; the first and second by convenience, and the third, probably, arbitrarily. We will take the same sized ram as used in previous crane, and the same length—123 inches—of the unsupported cylindrical part at full stroke. The annular cross-section of this ram—13 inches outside and 7 inches inside diameter—gives, at 5000 pounds per square inch tensile strain, an elastic moment of 988,043 inch-pounds, which, divided by 123 (the unsupported length), gives 8033 pounds for the safe limit for the forces *p'* and *p* acting at *a* and *b*. This is the limit of strength of the ram and must not be exceeded; but by separating *a* and *b*, which may easily be done by sinking the cylinder into the ground, we increase the power of this limit for sustaining a load at the outer end of the gib.

Sinking the cylinder has several advantages—it increases its stability without widening its base, permits of a lighter shell, and allows the use of a smaller base-plate and lighter foundations. There are, however, some objections to it; the principal ones are placing the stuffing-box where it is more exposed to dirt, &c., and bringing the projecting parts of the mast closer to the working level. We have chosen 4 feet above ground for the top of gland; this avoids, in a measure, the above objections, and permits the safe handling of a load of 8018 pounds net. By using a solid ram we may increase this net load nearly 1000 pounds, and by making it hollow, with diameters as given above—but using steel instead of cast iron—the safe load would be about 18,000 pounds, which might be still further increased by sinking the cylinder lower. Having found *p'* (= 8033 pounds), we may, with the stroke and hight of mast—given elsewhere—construct the diagram of bending moments, Fig. 5, and from it proportion our mast. A cast-iron mast this size, of adequate strength, will be found cumbersome; a better mast may be made of wrought iron—a heavy 15-inch I-beam, as shown. The line *y y* is the line of elastic moments as found from table of I-beams of the Union Iron Mills. We see that opposite the gib the strength of the I-beam is not great enough. It is at a place, however, where it may easily be strengthened, and probably the cheapest way of doing so is by well-fitted cast-iron fish-plates, as shown. The line *y'y''* is the increase of the elastic moment due to these plates, which clasp the lower end of the beam, and by very heavy flanges at the bottom receive the ram. Projections from these castings are carefully fitted into notches in the flanges of the beam. The ram, immediately upon leaving the gland of the cylinder, is enlarged to meet the casting just described. The cylinder is made with a flange—or with eight separate ribbed lugs if desired—around its body, about 15 inches from its top end. The form of base-plate (see also Fig. 6) is light, and admits of through bolts for securing the cylinder.



ORDINARY FORM OF BESSEMER INGOT CRANES.

The top support for this form of mast is shown in Figs. 7 and 8. It consists of a cast-iron ring, *a*, which carries a wheel, *b*, running on friction rollers. The steel shaft *c* is about 2⅛ inches diameter, and is flattened bottom and top for a few inches on each end, so as to set into sockets at *d d* in ring *a* and be held without revolving. The frame *e e* has a lower ledge or flange to support the ring *a* and the light cast-iron rollers *f f*. The cover *g g*, secured by bolts through the holes *h h*, is placed over the ring *a* and rollers *f f*. The lugs *i i* receive the guy-rods. With care in casting the different parts, this top support can be fitted up with very little machine work. The rollers *f f* are free, as are also the rollers in the wheel *b*. The former being short in proportion to their diameter, have no tendency to fall on their sides. The calculated weights are as follows:

CRANE—FIG. 1.

Mast	8,050 lbs.
Cylinder	7,220 "
Base-plate	3,981 "
	20,151 lbs.

CRANE—FIG. 5.

Mast	Cast iron	5,809 lbs.
	Wrought iron	1,970 "
Cylinder		4,187 "
Base-plate		3,097 "
		14,063 lbs.

Difference in favor of crane, Fig. 5 ..... 6,088 lbs.

The mast and cylinder of crane, Fig. 5,

* A paper read at the Cleveland meeting of the American Society of Mechanical Engineers.

compares favorably, I think, with those of Fig. 1, as regards cost of construction; the top support, however, is more complex. Its lifting power, like crane, Fig. 1, however, is far beyond its safe load, as is shown by the following:

13″ dia. = 132.7″ area × 300 lbs. pressure =		39,810 lbs.
Weight of mast	7,779 lbs.	
" jib, &c	3,263 "	
Friction, .3 % of p =	2,673 "	
" at b, assume	500 "	
" in stuffing-box, assume	4,000 "	
		18,225 "
Leaving a net lifting load of		21,585 lbs.

with which to lift 8918 pounds, or the safe load is little over 41 per cent. of the power of the crane. It would seem that there is room here for the introduction of a "breaking block," or a piece, the breaking of which, without injury or derangement to the crane, would give warning that the load was exceeding the safe limit.

In Figs. 9 and 10 is shown an arrangement designed for this purpose, and one is introduced into each tie-rod. The tie-rod $a\ a$ is forked, and there is inserted a link of tough, fibrous iron, having its cross-section of such a size that the bar will commence to stretch under the maximum load; $b\ b$ represents this bar, and $c\ c$ are castings carrying a small tell-tale bar, d, of brittle cast-iron, with a very small cross-section. Any stretch of b will cause the breaking of d, and this, together with the hanging down of the castings $c\ c$, reveals the fact that the safe limit of the crane has been reached. The tell-tale bar d goes into place from the back, when the link $b\ b$ is inserted, and a small lug or flange, which the bar carries, prevents it from working through. It therefore remains loose until bound or broken by the stretch of the link, and as soon as this occurs the ends of the castings drop as described. Every time the crane is strained beyond its safe limit, new links $b\ b$ and new bars d must be inserted.

Having noticed such serious defects in the ordinary form of ingot crane, it may not be out of place, in conclusion, to mention a form of crane in which these defects may be avoided, namely, the Wellman, or rolling jib crane. This crane is admirably adapted for safety and strength, and also for economy of water. The two wrought-iron beams which form the mast may be proportioned to resist the bending strain from any desired maximum load, and the cylinder (placed between them) proportioned so that a greater load cannot be lifted. The improved form of these cranes has two concentric rams, and by using the inner or smaller ram for light loads an economy of water is effected. For economy, however, the hydraulic crane is not conspicuous. As much work is expended in lifting an empty crane as is required to raise the same when loaded to its full lifting capacity; this follows from the fact that the same number of cubic inches from the accumulator are required in each case. With the empty crane the surplus work is expended in friction in pipes, valves, &c.

APPENDIX.

Referring to Figures 1, 2, 4 and 5:

a = point of lateral support to mast at cylinder.
b = point of lateral support to mast at block in roof.
$c\ d\ d$ = projections on the axis of the mast of the pins in the tie-rods,
h = distance from a to b = 263″ (in Figs. 1 and 2) = 331″ (in Figs. 4 and 5).
k = distance from c to d = 110″ (in Figs. 1 and 2) = 125″ (in Figs. 4 and 5).
v = variable dist. b to d = 126″ to 18″ (in Figs. 1 and 2) = 112″ to 4″ (in Figs 4 and 5).
l = working length of gib = 246″ (in Figs. 1 and 2) = 246″ (in Figs. 4 and 5).
r = stroke of crane = 108″ (in Figs. 1 and 2) = 108″ (in Figs. 4 and 5).
W = greatest weight, including ties, gib, &c., reduced, that can be safely borne by the crane at the outer end of the gib.

Formula for elastic resistance of annular cross sections is:

$$M = .0982 \times \frac{D^4 - d^4}{D} \times f.$$

In which D = outside diameter
d = inside "
f = limit of strain for material

—in this case 5000 pounds tensile strain per square inch.

By substituting in this equation the values of D and d given in the following table, we obtain the moment by which the lines $x\ x$, x', &c., are laid off:

	D	d	Moment (M)
From b to t	13″	9″	831,000 inch-lbs.
At t	12″	7″	750,248 "
Middle piece	16″	11″	1,562,871 "
" "	13″	9″	831,000 "
At t'	12″	7″	750,248 "
Ram	13″	9″	831,000 "

From which we see that at t and t' are the weakest moments in the mast. W should then produce at one or at both of these sections a bending moment = 750,248 inch-pounds.

The New England Mills and the New Tariff.—The manufacturing industries of New England, says the Boston *Herald*, are in a transition state. The supremacy of generations is seriously challenged, and the rivalry of other parts of the country renders the future somewhat problematical. Conservative men who handle immense quantities of the merchandise produced in the Eastern States speak cautiously of the immediate future, and mill owners are in the midst of a general discussion of the question of shutting down, or in some degree curtailing production. This remark does not apply to all branches of manufacture. Indeed, there is no general observation which will apply to the mills of New England at the present time, or that can be used in forecasting the future. In textiles, some branches will rush production through the fall, while others will run as moderately as practicable. In all branches, as a heavy handler of goods said recently, the best goods will always find a market, so those mills which run a high grade of textiles will not only not curtail production, but will, in many cases, largely increase it. The outlook for the fall business of New England mills is based upon facts gathered from the representatives of the leading manufacturing interests in this section. It is true that the conservative and the sanguine business man will draw different conclusions from the same conditions, but the diverse views do not neutralize each other; they picture actual and important phases in the business problem as it appears to those who must keep mills in motion and warehouses emptying as fast as they fill. It is pretty generally conceded that nearly all mills which produce woolen fabrics must struggle for a while against the results of a change in the tariff, and that for a few months, for this reason alone, they will be obliged to run without profit.

Water-Gas as Fuel.

In a paper read before the American Institute of Mining Engineers, Mr. W. A. Goodyear, M. E., New Haven, Conn., gives the following interesting information on the subject of water-gas:

It is safe to assert that in cities generally, the fuel of the future for all domestic, as well as for most manufacturing and metallurgical purposes, will be gaseous fuel. The immense advantages which gas possesses in facility and cheapness of distribution, cleanliness and economy of manipulation, and the facilities which it offers for utilizing in almost all cases a much higher percentage of the total quantity of heat produced than it is possible to do with any kind of solid fuel, are facts which will vastly more than compensate for the comparatively small loss of heating power which will be found necessary in the turning of the solid fuel into gas upon a large scale, and which, in the opinion of the writer, will, at no distant day, command attention, and will ultimately result in a revolution in our use of fuel.

The employment of gaseous fuel upon a scale of any considerable magnitude has hitherto been almost entirely confined to the utilization of the waste gases of the iron smelting furnace for heating the blast, and the rapidly increasing use for certain metallurgical purposes of Siemens generator gases. By means of the latter, it becomes possible in many localities to utilize solid fuel of so poor a quality as to be utterly unfit for direct application to metallurgical purposes, while the gas which it furnishes is easy of application, and is capable of producing without difficulty the highest degrees of heat ever required in such operations. But as a fuel for general application to domestic and manufacturing purposes, the Siemens generator gas has two great drawbacks: First, the total quantity of heat which it is capable of producing for a given volume of gas is quite small in comparison with what can be obtained from some other gases, while if the comparison were made between equal weights instead of equal volumes, the difference would be greater still, for the Siemens gas is a gas of high specific gravity. Second, this gas always contains a very large percentage of nitrogen, together with smaller quantities of some other gases, which not only add nothing to its heating power, but carry off with them and render it impossible to utilize a considerable percentage of the heat actually produced by the combustible ingredients.

The latest experiments on a scale of some magnitude in our cities, in the way of heating buildings and furnishing power for manufacturing purposes, have been by the distribution of high-pressure steam through pipes laid in the streets. But these experiments have not hitherto been very successful, and when we consider the high cost and the great and unavoidable loss of heat and power which always accompany the conveyance of high-pressure steam to any considerable distance in pipes, to say nothing of certain practical difficulties in the management of the pipes themselves, it is evident that all such methods must eventually disappear before a system which can furnish a cheap gas of great heating power, easily distributed wherever wanted, without requiring pipes to stand pressures of 50 to 75 pounds per square inch, and without keeping the whole mass of ground in the streets through which it passes, hot, gratis, for a distance of 10 to 15 feet in all directions around the pipes.

The gas which best answers all the most important requisites for a good gaseous fuel is "water-gas," consisting essentially of a mixture of equal volumes of carbonic oxide and free hydrogen, obtained from the decomposition of steam by contact with incandescent carbon. Much experimenting has been done under various patents within the last few years, in the way of attempts to produce a cheap and good illuminating gas, by the enriching of water gas with the vapors of the various heavy hydrocarbons, and these experiments have been attended with a certain degree of success. But it seems somewhat remarkable that, while so much ingenuity and money have been expended in that direction, the far easier adaptability of water-gas as a means for the cheap and convenient production of heat, and the immensely greater field which is open for its application to this purpose, have been, comparatively speaking, almost entirely neglected. The chief cause of this neglect lies probably in the fact that hitherto no method has been generally known by means of which water-gas could be produced at so low a cost and in such large quantities as are required for a fuel gas. There is good reason to believe, however, that an apparatus devised by the writer will supply this lack, and that water-gas can now be made in any quantities that may be desired, and at a cost that, besides leaving a handsome profit to the manufacturers, will render its general use in cities far more economical than that of any kind of solid fuel. In support of this assertion, I propose to present, first, a short outline sketch of the most prominent features of the apparatus referred to, and its general method of working; second, some theoretical considerations with reference to the absolute heating power and maximum flame temperature of water-gas, as compared with those of ordinary illuminating gas and the gas from Siemens generators, and, third, a few resulting inferences and general remarks. The apparatus itself consists of a generator, in combination with regenerative or superheating chambers and proper pipe connections to carry out the process. * *

While at the first glance the apparatus may appear somewhat complex, a very little study will suffice to show that not only the apparatus

itself, but also its method of working, is in reality extremely simple, and that both possess the two all important requisites of saving and utilizing the highest possible percentage of all the heat developed in the course of the manufacture, and of yielding as their final products a gas which is uncontaminated by any considerable quantities of nitrogen or other inert and injurious diluents. As a basis for theoretical computation, assume the following data:

A.—SPECIFIC GRAVITIES.

Air	1.00000
Nitrogen	0.96978
Oxygen	1.10852
Steam	0.62343
Hydrogen	0.06927
Carbonic oxide	0.96978
Carbonic acid	1.52194

One cubic foot of air at 0° C. and 0.76 m. pressure weighs 0.0807561 lb. av. Or 1 lb. av. of air at 0° C. and 0.76 m. pressure measures 12.38297 cubic feet.

B.—SPECIFIC HEATS FOR EQUAL WEIGHTS.

Nitrogen	0.2438
Steam	0.4805
Oxygen	0.2175
Hydrogen	3.4090
Carbonic oxide	0.2450
Carbonic acid	0.2163
Air	0.23744

C.—CALORIFIC POWERS—CENTIGRADE.

Carbon, burned to carbonic oxide	2,473
Carbon, burned to carbonic acid	8,080
Carbonic oxide, burned to carbonic acid	2,403
Hydrogen, burned to steam	29,638
Hydrogen, burned to water	34,462

The latent heat of steam = 536° C. The calorie used in what follows is = to 1 lb. av. of water, heated 1° C. It follows from the above that air, consisting of nitrogen and oxygen, has the following composition:

	By weight.	By volume.
Nitrogen	75.8242 per cent.,	or 78.187 per cent.
Oxygen	24.1758 per cent.,	or 21.813 per cent.

Also, that 1 pound of carbon, in decomposing 1¼ pounds of steam with the production of equal volumes of hydrogen and carbonic oxide, will absorb 2466⅔ calories. Now, take 2000 pounds of anthracite coal, and suppose it to consist of 94 per cent. carbon and 6 per cent. ash. For the production of steam to drive a blowing-engine allow 5 per cent. = 100 pounds of coal, and for the production of the steam required for decomposition, assume that 1 pound of anthracite will evaporate 8 pounds of water. To decompose 8 pounds of steam, with the production of equal volumes of hydrogen and carbonic oxide, there will be required 5⅓ pounds of carbon, or 5.673759 pounds of anthracite, containing 94 per cent. of carbon. But in effecting this decomposition there are absorbed 13.155⅓ calories, which, to produce them, will require 1.6281 pounds of carbon burned to carbonic acid.

Suppose, furthermore, that all the waste gases, consisting of carbonic acid and nitrogen, and all the useful gases, consisting of carbonic oxide and hydrogen, are finally discharged from the apparatus with a temperature of 200° C. In order to ascertain how much additional carbon it is necessary to burn to carbonic acid to furnish this amount of lost heat, we have the following considerations: 5⅓ pounds of carbon in decomposing 8 pounds of steam produce 12⅔ pounds carbonic oxide and ⅔ pound of hydrogen. Also, 1 6281 pounds of carbon in burning to carbonic acid will require 17.959148 pounds of air, and will produce 5.96993 pounds of carbonic acid and 13.61738 pounds of nitrogen. These four products, viz.: 12⅔ pounds carbonic oxide, ⅔ pound hydrogen, 5.96993 pounds carbonic acid and 13.61738 pounds nitrogen, will require, in order to raise their temperature 200° C., the quantity of 2138.065 calories. The additional coal to be burned to carbonic acid must, therefore, furnish this amount of heat, and also the further additional quantity required to raise the temperature of its own products of combustion to the same degree. But 1 pound of carbon, burned in air to carbonic acid, produces 3⅔ pounds carbonic acid and 8.36365 pounds nitrogen, which, in order to raise their temperature 200° C., require 566.432 calories, while the combustion of the pound of carbon produces 8080 calories.

Therefore, if x represents the additional carbon which must be burned to carbonic acid in order to permit all the above products to carry off 200° C. of heat, then to determine x we have the following equation:

$$566.432\,x + 2138.06 = 8080.\,x$$

whence, $x = 0.28456$ lb.

If, now, x be added to the quantity of carbon burned to carbonic acid, in order to furnish the heat which is afterward absorbed in the decomposition of the steam, we have for the total quantity of carbon which must be burned to carbonic acid to effect the decomposition of the 8 pounds of steam, allowing all the products to carry off 200° C. of sensible heat, 1.91272 pounds, equivalent to 2.03481 pounds of anthracite containing 94 per cent. of carbon. The total quantity of coal, therefore, consumed in the decomposition of 8 pounds steam (exclusive of a small portion of the 100 pounds originally allowed out of the 2000 pounds to drive a blowing-engine), and allowing all the products to leave the apparatus at a temperature 200° C. (*i. e.*, 360° F.) higher than they enter it, is distributed as follows:

	Lbs.
Coal burned to turn 8 lbs. of water into steam	1.00000
Coal burned to carbonic acid	2.03481
Coal consumed in decomposing steam	5.67379
Total	8.70857

Now, these three quantities represent the exact ratios to each other of the three parts into which the 1900 pounds of coal must be divided. Taking them, therefore, in connection with the 100 pounds at first set aside for driving a blowing engine, we finally have the complete distribution of the whole 2000 pounds of anthracite, as follows:

	Lbs. Coal.	Lbs. Carbon.	Lbs. Ash.
To drive blowing engine	100.0000 =	94.0000 +	6.0000
To produce steam for decomposition	218.1759 =	205.0853 +	13.0906
Burned to carbonic acid in apparatus	443.9465 =	417.3097 +	26.6368
Directly used in decomposing steam	1237.8776 =	1163.6550 +	74.2226
Total	2000 00.0 =	1880.0000 +	120.0000

		Lbs.	Lbs.	Lbs.
Q'ntity of air used	O. = 1112.8251 / N. = 3479.4135	4592.2386	=	27.5534
Quantity of steam decomposed		1745.4072	=	10.4724
Products.				
Waste Gas	Carbonic acid,	1230.7356	=	10.3134
	Nitrogen,	3479.4135	=	29.1500
Useful gas	Hydrogen,	149.3333	=	1.2500
	Carbonic oxide,	1713.5077	=	14.3500

Heat Carried Off.

		Calories.
By 1530.1356 lbs. carbonic acid, @ 200° C	=	66,193
By 3490 2338 lbs. nitrogen, "	=	170,283
By 193.9342 lbs. hydrogen, "	=	132,824
By 2715.0783 lbs. carbonic oxide, "	=	133,038
Total carried off by gases.....	=	501,638

If to the 501,638 calories carried off by the gases we add the amount of heat absorbed in the decomposition of 1745.4075 pounds of steam, viz.: 2,870,225 calories, we obtain 3,371,863 calories, which is the quantity of heat produced by burning 417.3097 pounds of carbon to carbonic acid. The 2,870,225 calories absorbed in the decomposition of the steam are, of course, not lost, but are, as it were, stored up in the mixed hydrogen and carbonic oxide gases, to be given out again whenever they are burned. Further:

	Calories
193.9342 lbs. = 34,668 cu. ft. hydrogen, burned to steam, will produce.....	5,747,822
2715.0783 lbs. = 34,668 cu. ft., carbonic oxide, burned to carbonic acid, will produce.....	6,524,333
Total.....	12,272,155

Thus, 69,336 cubic feet of mixed gases, derived from 2000 pounds of anthracite, and consisting of equal volumes of hydrogen and carbonic oxide, will produce by their combustion 12,272,155 calories, which is about 81 per cent. of 15,190,400 calories, the latter being the total heat-producing power of the 1880 pounds of carbon contained in the 2000 pounds of anthracite. If the apparatus in which the gases are burned be so constructed as to condense the steam produced by the combustion of the hydrogen, then (since the latent heat of steam is 536° C.) there will be saved from that source the additional quantity of 935,538 calories, making a total of 13,207,693 calories, or about 87 per cent. of the total heat-producing power of the coal.

To compute the maximum flame temperature, take 1 pound of hydrogen and 14 pounds of carbonic oxide, being equal volumes. For their combustion to steam and carbonic acid these gases will require 66.1815 pounds of air, consisting of 16 pounds of oxygen and 50.1815 pounds of nitrogen, and to heat the products of their combustion 1° C. will require the following amounts of heat:

	Calories.
8. of steam will take.....	4.3245
2 " " carbonic acid will take.....	4.7586
50.1815 lbs. of nitrogen " "	12.2342
Total.....	21.3173

But in combustion

	Calories.
1 lb of hydrogen burned to steam produces	29.638
14 lbs. of carbonic oxide burned to carbonic acid produce.....	33.642
Total.....	63.280

Therefore, the maximum flame temperature = 63,280 ÷ 21.3173 = 2968.5° C., or 5375° F.

Now, in order to institute a comparison between water gas, ordinary illuminating gas and Siemens generator gas, I will consider in succession 100 cubic feet of each of these three sorts of gas, giving in each case the specific gravity of the gas, its composition and weight, the composition and wieght of the products of its complete combustion in air, the number of calories produced by such combustion, and the maximum flame temperature, all computed from data herein assumed, so that any one so disposed may judge of the data and verify the computation at his leisure:

NO. 1.—WATER GAS—100 CUBIC FEET.

Specific gravity.....				0.5195
Weight.....	Hydrogen,	0.2797 lbs.	=	4.1955
	Carb. oxide,	3.9158 lbs.		
Products of complete combustion in air..	Steam,	2.5173 lbs.	=	22.7065
	Carb. acid,	6.1534 lbs.		
	Nitrogen,	14.0388 lbs.		

Calories produced by complete combustion in air, 17,699.
Maximum flame temperature = 2968.5° C., or 5375° F.

NO. 2.—ILLUMINATING GAS—100 CUBIC FEET.

The composition of illuminating gas varies greatly, and no such thing as an exact average of its composition or quality can be said to exist. It is necessary, however, to assume some definite composition as a basis upon which to found a computation. The composition which I shall assume as representing a fair ordinary quality of illuminating gas is the mean of three analyses of gases manufactured by three different companies in the city of London, as given in Ure's Dictionary, 7th edition, 1875. This mean, stated in volumetric percentages, is as follows:

Illuminating hydrocarbons.....	3.59
Marsh gas.....	37.07
Hydrogen.....	48.06
Carbonic oxide.....	8.12
Carbonic acid.....	0.19
Nitrogen.....	2.40
Oxygen.....	0.57
Total.....	100.00

It will be noticed that in this analysis the heavy hydrocarbons (of which there is quite a variety) which impart to the gas its illuminating power are all grouped together in a single item, as "illuminating hydrocarbons." But the percentage which these hydrocarbons form of the whole mass of the gas is so small that no very serious error can be introduced in computing the total heat-producing power of the gas if we assume that their specific gravity is equal to that of olefiant gas, and that the ratio of carbon to hydrogen in the whole of them is the same as in olefiant gas, viz.: 6 of carbon to 1 of hydrogen, by weight. I shall proceed, therefore, on this assumption. In converting these volumetric percentages into weight percentages, I also assume that the specific gravity of olefiant gas is 0.985, and that of marsh gas, 0.556. Furthermore, in computing the total heat-producing power of this gas, I assume that no heat whatever is absorbed by the mere disruption of the hydrocarbons; or, in other words, that each atom of carbon and each atom of hydrogen which they contain produces in their combustion just as much sensible heat as it would do if the carbon and hydrogen were only mechanically mixed instead of being already chemically combined. On these assumptions, then, we have for the 100 cubic feet of illuminating gas the following results:

Specific gravity.....				0.3860
Weight.				
	Olefiant gas,	0.2856 lbs.		
	Marsh gas,	1.6645 "		
	Hydrogen,	0.2588 "		
	Carb. oxide,	0.6359 "	= Lbs.	3.1172
	Carb. acid,	0.0234 "		
	Nitrogen,	0.1879 "		
	Oxygen,	0.0511 "		
Combustible ingredients.				
	Carbon,	1.4931130 lbs.		
	Hydrogen,	0.7257556 "		
	Carb. oxide,	0.0931856 "		

Products of complete combustion in air.

	Steam,	6.5378 lbs.		
	Carb. acid,	5.5348 "	= Lbs.	42.8340
	Nitrogen,	30.7674 "		

Calories produced by complete combustion in air = 33,630.
Maximum flame temperature = 2847.2° C. = 5146° F.

NO. 3.—SIEMENS GENERATOR GAS—100 CUBIC FEET.

The composition of this gas also varies largely. But a good quality of it would be represented by a mixture of equal volumes of carbonic oxide and nitrogen. I shall assume this composition, from which I deduce the following results for 100 cubic feet:

Specific gravity.....				0.96978 lbs.
Weight.....	Carb. ox.	3.9158 lbs.	=	7.8316 "
	Nitrogen	3.9158 "		
Products of complete combustion in air....	Carb. acid	6.1534 "	=	17.0871 "
	Nitrogen	10.9337 "		

Calories produced by complete combustion in air = 9409.667.
Maximum flame temperature = 2354.4° C., or 4270° F.

Comparing now the water gas with Siemens generator gas, we see that the former, with a specific gravity but little over half as great, gives a considerably higher maximum flame temperature, and yields for equal volumes nearly twice the total quantity of heat produced by the latter. But, compared with illuminating gas, the water-gas has about one-third greater specific gravity, and yields about one-half as great a total quantity of heat for equal volumes, while it can produce a maximum flame temperature fully as high as that of the illuminating gas. It is also worth noticing that the nature and quantity of the products of combustion of water-gas are such that, when discharged at the same temperature, they carry off with them just about the same percentage of the total quantity of heat produced as do the products of the combustion of illuminating gas, while in the case of the Siemens generator gas the percentage of heat thus lost is considerably larger.

It is not to be supposed, of course, that the precise results of such computations as these can ever be exactly realized in practice, for the precise data which it is necessary to assume in order to be able to make any computation at all are in reality never met with in practice. As a matter of fact, Siemens generator gas never consists exactly of 50 per cent. of carbonic oxide and 50 per cent. of nitrogen, but is always more or less contaminated with carbonic acid and other impurities, and contains small quantities of various hydrocarbons, &c., the quantity and nature of which vary with different fuels, and with the varying conditions of its production. And as to illuminating gas, no two samples of it can be found in the country having exactly the same percentage composition, while water-gas itself will never consist entirely of equal volumes of carbonic oxide and free hydrogen, but will always contain small quantities of carbonic acid and some other impurities, together with a greater or less amount of hydrocarbons, according to the nature of the fuel employed in its production, the purest anthracite itself being never entirely free from hydrocarbon compounds. Nevertheless the data herein assumed are such that, so far as heat-producing power is concerned, they represent good, fair qualities of the three different kinds of gas under consideration closely enough not only to afford a just basis of comparison between these gases, but also a basis for safe estimate as to what can actually be accomplished with water-gas. The percentage of carbonic acid contained in the water gas may always be reduced to a very small quantity, inasmuch as it is always easy to have the depth of the coal in the generator sufficiently great, so that, whatever may be the pressure of the blast employed, the carbonic acid which is formed in the bottom of the generator, where the blast first strikes the coal, must be practically nearly all reduced to carbonic oxide before it issues from the top. Another circumstance in the construction of this apparatus which not only greatly facilitates the rapid decomposition of the steam, but also largely increases the length of time during which each successive blast of steam may be continually sent through the generator before the latter becomes cooled down sufficiently to require another blast of air, is the very highly superheated condition in which the greatest portion of the steam enters the generator. In fact, there is no serious obstacle to having the first portions of every blast of steam enter the generator at a temperature nearly as high as the best fire-brick can stand without danger of glazing.

Another point in connection with this apparatus is the almost absolute impossibility of dangerous explosions, for, the pressure being steadily outward at all times and in every part of the apparatus, if any leaks occur they can only result in the escape and loss of gas or steam, and no opportunity is ever offered for external air to enter and form explosive mixtures with the gas inside. We have already seen that 2000 pounds of anthracite coal of the quality and under the conditions specified above should be capable, viewed from a theoretical standpoint, of producing 69,336 cubic feet of water-gas, of about equal intrinsic value for heating purposes to one-half the same volume of a fair quality of illuminatiug gas. It is not pretended, of course, that this result can be fully realized. But leaving generous margin, it is safe to assert that, in practice on a large scale, the equivalent of 50,000 cubic feet of such gas from each 2000 pounds of anthracite of good ordinary quality can be realized and even somewhat exceded. At this rate, and at $4 per ton of 2000 pounds for anthracite, the cost of the coal required would be only 8 cents per 1000 feet of gas. The cost of the labor involved and interest on capital invested per 1000 cubic feet of gas will, of course, vary very largely with the scale of magnitude upon which operations are conducted.

The capabilities of development of this apparatus are enormous. The generator may be built, to a certain extent, after the general model of the shafts of iron blast furnaces, with a crucible at the bottom, so that by adding to the fuel a small quantity of the proper fluxes all the mineral ingredients of the fuel may be melted down and from time to time tapped in the condition of liquid slag from the bottom of the generator, just as slag and iron are

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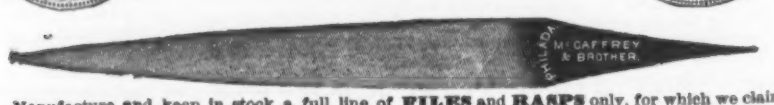

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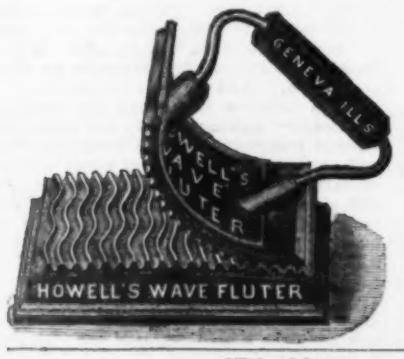

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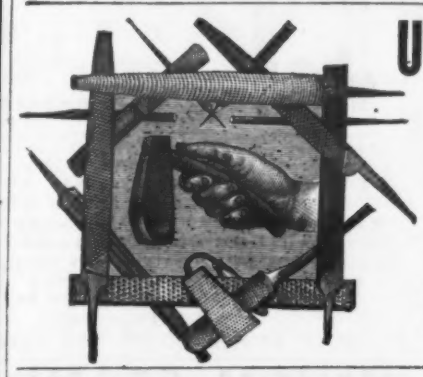

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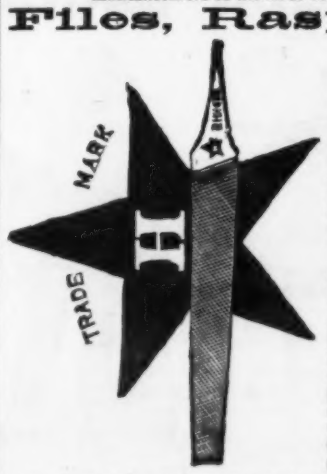

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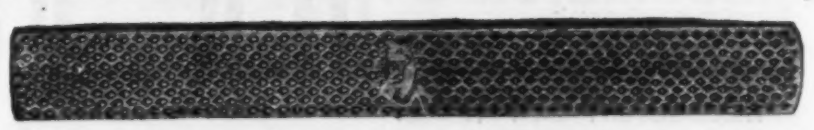

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tapped from the crucible of a blast furnace. There is, of course, no practical difficulty in building regenerative chambers of fire-brick of sufficient capacity to meet the requirements of the generator, however large that may be. And there is no good reason why a single apparatus should not be built which would be capable of turning 1000 tons of anthracite into more than 50,000,000 cubic feet of gas per day.

Another item worthy of notice in connection with this apparatus is the fact that any sort of carbonaceous fuel may be employed therein which does not offer too much obstruction to the passage through it of a powerful blast of air or steam. If non-coking bituminous coal be used, then the water-gas will simply have its heating powers increased by the amount of the hydrocarbons which it will contain. Among the anthracite regions of Pennsylvania an apparatus of this sort could take the coal as it comes from the mines, without breaking, screening or sorting (except to pick out lumps of rock), and turn it into gas. By taking the coal at the mines, without breaking or screening, its cost per ton would be less than half what the broken and screened coal can be sold for in New York; and with an apparatus of the magnitude just mentioned, the cost of labor would be but a fraction of a cent per 1000 feet, so that the total cost of the gas manufactured upon such a scale at the mines, including interest on capital invested, and all other incidental expenses, would probably not exceed 5 or 6 cents per 1000 cubic feet. It is also easier and cheaper to transport gas in pipes than it is to transport coal by rail, and the writer firmly believes that the time is not far distant when our cities generally will use gas far more than coal or steam for all ordinary heating purposes.

New York Metal Exchange Rules.

Rules Governing Transactions in Pig Iron Between Members of the New York Metal Exchange.

COMMITTEE ON PIG IRON.

1. At the first meeting of the Board of Managers after their election, the president shall (subject to the approval of the board) appoint as a Committee on Pig Iron three members of the exchange. It shall be the duty of this committee to grade and classify pig iron, and to them shall be reported all cases of complaint against inspectors, and also any question or dispute in regard to the inspection, quality, grade or weight of pig iron. A majority of the committee shall constitute a quorum, and a decision of a majority present at any hearing shall be final and binding. They shall keep a record of their proceedings, and a fee of $9 shall be paid the committee for each reference case heard by them, to be paid by the party adjudged to be in fault, unless otherwise ordered by the committee.

CLASSIFICATION OF PIG IRON.

2. The kinds of pig iron to be dealt in shall be American, Scotch, English and spiegel iron, and as soon as practicable after their appointment, the Committee on Pig Iron shall determine the classification respectively of No. 1, No. 2 gray forge, mottled, and white American anthracite pig iron, and Nos. 1 and 3 Scotch and English pig iron, and shall, if deemed practicable, cause samples of each grade to be placed in the exchange, which samples shall be the standard of comparison, as hereinafter provided for.

DELIVERIES.

3. Pig iron shall be good delivery only (unless otherwise stipulated at the time of sale) free to vessel or lighter from such warehouses as may be licensed by the New York Metal Exchange.

4. When pig iron is sold g.m.b. (good merchantable brand), only such irons shall be good delivery as may from time to time be designated as such by the Committee on Pig Iron.

5. On all pig iron sold under the rules of the exchange, the buyer shall have the right to demand that the delivery order shall be accompanied by a certificate of inspection, signed by an inspector licensed by the New York Metal Exchange, whose fee shall be paid by the seller, and whose certificate shall be a good tender in proof of grade and quality, but subject to appeal to the Committee on Pig Iron. Inspectors' fees shall be: On 100 tons or less, $5; for every additional 100 tons or fraction thereof, 50 cents.

COMMISSIONS.

6. The minimum rate of commission on pig iron bought or sold on margin for a party not a member of the exchange shall be 10 cents per ton, and where a "turn" is made (involving two transactions—viz., a purchase and sale) a commission must be charged on both, this rule being equally applicable to extension or transfer of contracts from one month to another. The minimum rate of commission to members of the exchange shall be one-half the above rates, where the contract is accepted and carried by the party making the sale. On pig iron bought from or sold to a non-member for a member under the rules, by a broker, where both principals' names are given up and contracts passed directly between them, a brokerage of 1 per cent. shall be charged and paid; but where both parties to such a contract are members of the exchange, the rate of commission shall be 5 cents per ton. The above-mentioned rates shall be in each case the minimum commission that may be charged by any member of this exchange, and shall be absolutely free of all and any rebate or discount in any way, shape or manner, under penalty of expulsion from the exchange.

Rules Governing Transactions in Old Iron and Steel Between Members of the New York Metal Exchange.

COMMITTEE ON OLD MATERIAL.

1. At the first meeting of the Board of Managers after their election, the president shall (subject to the approval of the board) appoint as a Committee on Old Material three members of the exchange. It shall be the duty of this committee to grade and classify old iron and steel, and to them shall be reported all cases of complaint against inspectors, and also any question or dispute in regard to the inspection, quality, grade or weight of old iron or steel. A majority of the committee shall constitute a quorum, and a decision of a majority present at any hearing shall be final and binding. They shall keep a record of their proceedings, and a fee of $9 dollars shall be paid to the committee for each reference case heard by them, to be paid by the party adjudged to be in fault, unless otherwise ordered by the committee.

CLASSIFICATION.

2. As soon as practicable after their appointment, the Committee on Old Iron and Steel shall make a classification of scrap iron, as "No. 1, No. 2 and No. 3, New York Metal Exchange Classification," and also a classification of old rails and crop ends, and on all contracts under these rules only such iron and steel shall constitute a good delivery for the grade called for by the contract as shall fully comply with the official specification (unless by special agreement at time of sale), which specification shall be posted conspicuously on the exchange, and copies thereof furnished to any member who may apply for them.

DELIVERIES.

3. Deliveries of old iron and steel shall, unless by special contract, be from such warehouse as may be licensed by the New York Metal Exchange, free to vessel or lighter. On contracts for delivery at Philadelphia or Baltimore, deliveries shall be made ex-vessel or warehouse, and free to vessel or lighter.

INSPECTION.

4. On all deliveries of old material inspection to be governed as in pig iron.

Rules Governing Transactions in Manufactured Iron and Steel Between Members of the New York Metal Exchange.

BAR IRON.

1. Merchant bar iron, to be good delivery, must be in accordance with the Eastern classification of regular sizes and extras; must be of strictly neutral quality, neither cold nor red short. Bars must be of uniform lengths, from 15 to 17 feet long for sizes 1″ to 6″ wide by ⅛″ to 2″ thick for flats, ¼″ to 4″ rounds and squares (unless otherwise specified). All flat and square bars to have good square edges. Round bars to be uniformly round. All bars to be free from defects, such as flaws, seams, cracks, &c., and practically straight and rolled true to size. Other sizes than above specified to be manufactured and packed as buyers may desire.

Any disputes as to quality or specification of bar iron shall be settled by a special committee of three, to be appointed by the president of the New York Metal Exchange.

STEEL BLOOMS.

2. Steel blooms, to be a good delivery, shall, unless by special contract, be of good, homogeneous steel, free from flaws, 7 inches square, and not more than 610 pounds or less than 590 pounds in weight, and delivered free to vessel or lighter in the port of New York, ex-ship, or a warehouse designated by the Warehouse Committee of the New York Metal Exchange, and delivery order must be accompanied by a certificate of analysis by an approved chemist at point of manufacture. Any disputes as to quality to be settled by a special committee of three, to be appointed by the president of the New York Metal Exchange.

General Rules Governing Transactions in Iron and Steel Between Members of the New York Metal Exchange.

CALLS.

1. There shall be a public call each day at 11 a. m. on American anthracite pig iron, old rails, and such other kinds of iron and steel as may from time to time be designated by the committees on Pig Iron and Old Material, to be conducted by the secretary of the exchange, or, in his absence, by a person to be selected by a majority of the members present. Spot shall be called first, and then the months in their order, for each article. No offer to buy or sell shall be entertained at a less difference than 25 cents per ton, or for a smaller quantity than 100 tons. The first offer to buy or sell at a price shall be accepted before subsequent offers at the same price may be placed. Subsequent offers to buy at a higher or sell at a lower price shall vacate prior offers to buy at lower or sell at higher prices. A transaction shall vacate all previous bids and offers. All disputes as to offers, acceptances or withdrawals shall be decided on the spot by the person presiding at the time, subject to an appeal to the members present. The appeal must be promptly taken, and a majority of the members present and voting shall settle the disputed point finally.

The secretary shall immediately after each call cause to be printed on the bulletin of the Exchange the results of the call, setting forth the bidding and asking prices of the several articles dealt in.

At the close of each call, settling prices shall be announced by the person conducting the calls, subject to the trade there assembled, and the prices so fixed shall govern all calls for margins. These prices shall also be used for settlements of contracts, and of differences on deliveries under contracts, in accordance with the by-laws and trade rules on iron and steel.

MARGINS.

2. Either party to a contract, prior to or upon signing the same, shall have the right to call an original margin of $2 per ton on iron, and either party may call for margins to meet variations in the market.

All margins on contracts shall be deposited in one of such trust companies, banks incorporated by the State, or National banks, as may have been designated for the purpose by the Finance Committee of the New York Metal Exchange.

When margins are called before 12 o'clock m., they must be deposited before 3 o'clock p. m. the same day; if after 12 o'clock m., they must be deposited before 11 o'clock a. m. the next day.

3. In case of failure to deposit as above, then the party calling the margin shall notify, in writing, the party on whom the margins were called of his or their failure to make the required deposit, and if the margins are not then promptly deposited, and if the party in default fails to give a proper notice of his failure, the party calling the margins shall have the right to cover his or their contract at discretion for account of party failing to respond to the call for margin, and, if cov-

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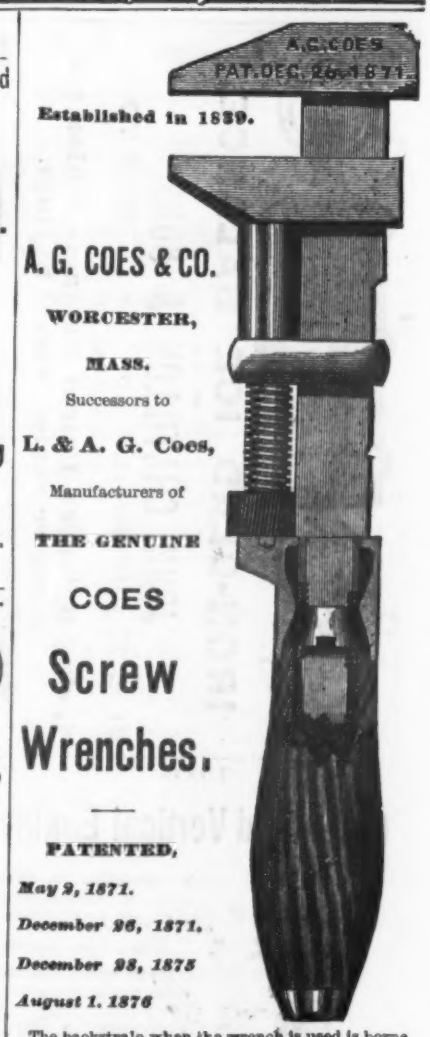

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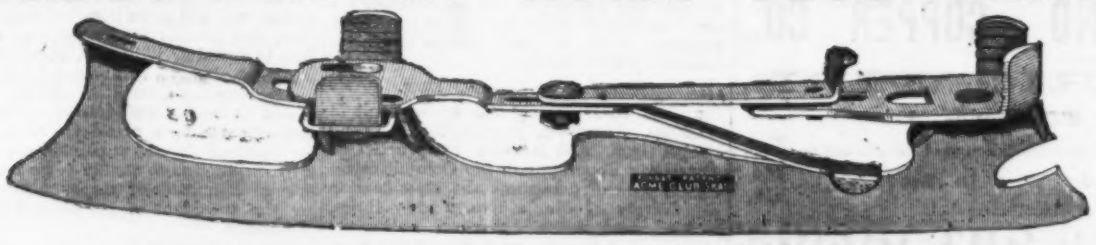

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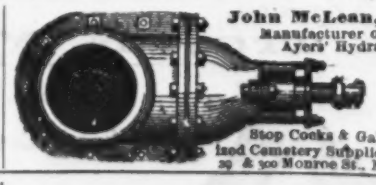

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ered, give notice in writing to that effect to party in default.

In case of failure of any bank or trust company in which such margins have been deposited, it shall be the loss of the party or parties to whom it may be found to be due, taking the average price of like deliveries on the day such bank or trust company failed as a basis of settlement.

When margins are called, original or for variations in the market, certified checks must be drawn to the order of the bank or trust company in which they are to be deposited. Checks must be sent to the secretary of the New York Metal Exchange, who shall deposit them and get a certificate of deposit, made payable on the order of the secretary of the New York Metal Exchange, and to the order of the buyer and seller. As soon as the secretary has received the certificate, he shall send it to the party making the deposit, and an abstract to the party calling the margin. In settlement the secretary shall ascertain the amount due each of the parties at interest, and shall indorse the amount due each one on the certificate over his own signature, as instructed by both parties. In case the two parties do not agree as to the amount due on a margin receipt, either of them may refer the matter to the Committee on Pig Iron or Old Material, as the case may be, for decision, which shall be final. On the decision of said committee, the secretary of the New York Metal Exchange, on being informed thereof, shall promptly indorse to each party the amount each shall be entitled to by such decision. In case of the absence of the secretary, the president of the New York Metal Exchange or the chairman Finance Committee shall act in his stead under this rule.

ALLOWANCES.

4. The ton of iron or steel shall be 2240 pounds, avoirdupois weight. On contracts for specific lots, sold to arrive, 25 per cent., more or less, may be delivered, but any deficiency or excess greater than 10 per cent. must be settled for at the market price on day of delivery.

SETTLEMENT OF CONTRACTS.

5. Contracts shall not be transferable, and any difference found to be due on settlement shall apply on account between the parties to the contract. Any party holding a contract against another, corresponding in all respects (except as to price) with one held by the other party against him, may close or cancel both by giving notice in writing to said party; and where it appears that several parties have contracts corresponding (except as to price), and that a "ring settlement" can be made, the party finding said "ring" shall notify all parties thereto, giving names, time of delivery, quantity and settlement of price (which price must be within 25 cents of the market), and get their acknowledgments, from which time the said "ring" shall be in force, and cannot be broken by the failure of any of the parties therein, and all parties thereto shall be compelled to settle their differences on said contract with each other on the basis of the settlement price.

Where settlements of contracts for a specified month are made before maturity of said contracts, the legal rate of interest shall be allowed on the differences paid up to the first day of the maturing month.

All offers to buy iron or steel openly, for future delivery, on the floor of the exchange, must be open to the member first accepting such offer.

Verbal contracts, when satisfactorily proven, shall have the same standing as written contracts; but the claim under such contracts must be made on the day of the alleged transaction, or on the next business day thereafter. Parties holding an option may, by giving the necessary notice or order, require the other party to receive or deliver on the first business day of the option, subject to the same conditions as on any other day covered by the contract.

REMOVAL AND REJECTION OF GOODS ON CONTRACT.

6. Iron and steel sold on contract must be removed by the buyer before 5 p. m. of the day of delivery; if not so removed, all risk and expense must be assumed by buyer.

7. When iron or steel is rejected under final appeal, if tendered on a seller's option, all expenses shall be paid by the seller, and it shall be held that no tender has been made. If under a buyer's option, the seller shall, within 24 hours, tender another lot to the buyer, and pay all damages that the buyer has, in the opinion of the proper special committee, sustained.

8. The foregoing rule shall apply to all iron or steel sold by contract or to arrive. When specific lots are sold to arrive, however, rejections are not required to be replaced. When, under sale for future shipment of iron and steel, specific lots and vessels containing them are then named, sellers are released on such lots as may be rejected on arrival for cause.

NOTICE OF DELIVERY

9. On spot sales of iron and steel the buyer shall be allowed 48 hours, exclusive of Sundays and legal holidays, in which to make a proper inspection and remove the property. On contracts for future delivery five days' written notice of delivery shall be given, exclusive of Sundays and legal holidays. When sales are made to arrive, the seller shall give the name of the vessel or vessels as soon as known to him, and, on arrival, notice to be given buyer in writing. All such notices shall be given by a transferable order between the hours of 11 a. m. and 2 p. m.

Payments shall be made on transfer of documents conveying title before 2 p. m. of the day on which delivery is to be made.

PRIVATE ARBITRATION.

10. In case of disputes arising under any contract which are not otherwise provided for under the rules, unless the same shall be submitted to the Arbitration Committee of the exchange or any other provision made for their settlement, it shall be the duty of the parties thereto promptly to agree to the appointment of two arbitrators, and these shall appoint a third. The question in dispute shall be submitted to them, and their decision shall be final and binding. Said arbitrators shall be appointed from the branch of trade out of which the dispute may have arisen, and shall declare, before considering the question, that they know nothing of its merits from conversation with the principals, or otherwise, and they shall be paid $2 each for each hearing by the party adjudged by them to be in fault.

INSPECTORS.

11. All inspectors and weighers of iron and steel for delivery on sale or contract, under the rules of the exchange, must be licensed by the Board of Managers, and must obligate themselves not to be interested in any parcel they are licensed to inspect or weigh.

They shall be licensed only upon written application, stating the location of their place of business, which must be within the harbor of New York, or the cities connected therewith. Provided, however, that the certificate of inspection of those furnace companies whose grading may be approved by the Board of Managers of the New York Metal Exchange shall be valid for American pig iron, delivered at shipping port and not stored.

All licenses shall expire annually at such time as the Board of Managers may designate, and they may revoke said licenses at any time for cause.

12. The buyer of any article shall have the right to designate an inspector, but the seller shall have the right to appeal to the Committee on Pig Iron or Old Material, as the case may be, whose decision shall be final and binding.

All appeals from inspectors must be made before the property leaves the place of delivery. Weights and quality of iron and steel must be settled at the place of delivery, unless otherwise agreed upon.

PAYMENTS.

13. On sales of iron and steel, made for cash, seller shall have the right to demand payment at the time of passing title.

MATURITY OF CONTRACTS.

14. When a contract shall mature on Sunday or a legal holiday, delivery on such contract shall be made on the preceding business day. On contracts maturing on any other day upon which the Metal Exchange does not hold a business session, deliveries shall be made on the following business day.

BROKERAGE.

15. The brokerage on merchant bars and nails shall be 2½ per cent., and on all other articles of iron and steel, 1 per cent., and shall be due and payable at the time of passing contracts.

WEIGHING.

16. On all foreign iron and steel, the United States Custom House weights shall be taken to decide quantity, whenever the entire lot shall be delivered as originally entered. On all other lots of iron and steel, any sworn weigher's certificate at point of delivery (whose fees shall be paid by seller) shall be a good tender in proof of weight, but in any case either buyer or seller shall have the right to demand a reweight by a weigher licensed by the New York Metal Exchange, whose fee shall be paid by the party demanding such reweight.

DEFAULTS.

17. *Sec.* 1.—In case iron or steel be not delivered at maturity of contract, the purchaser shall notify in writing the special committee on that kind of iron or steel of the failure to deliver, and the committee shall, at the next call, publicly read such notice, and buy in the property for account of the party directing the purchase, but no unreasonable price shall be paid, arising from manipulated or fictitious markets, or unusual detention in transportation. Any legitimate loss resulting to the buyer shall be paid by the party in default, and the property so bought in shall be a good delivery on defaulted contracts maturing that day.

Sec. 2.—In case iron or steel contracted for delivery be not received and paid for when properly tendered, it shall be the duty of the seller, in order to establish a claim on the purchaser, to sell it on the market at any time during the next 24 hours, at his discretion, after such default shall have been made, notifying the purchaser within one hour after such sale, and any loss resulting to the seller shall be paid by the party in default.

18. When a member buys from or sells to another member, and the names of principals are not given up by the one to the other within 24 hours, those members shall be to each other as merchants or principals in such transactions, with claims on each other only, and liabilities to each other only, and notwithstanding that it shall afterward be shown that such members (either or both) were acting as brokers.

19. All rules as to iron and steel must be justly and liberally construed, and no property shall be rejected or condemned for merely technical reasons.

AMENDMENTS.

20. No change shall be made in these rules by any special committee before submitting the same to a meeting of the trade interested, properly called, at which 10 members shall constitute a quorum.

Rules Regulating Transactions in Tin, Copper, Lead and Spelter Between Members of the New York Metal Exchange.

COMMITTEE ON TIN AND COPPER.

1. At the first meeting of the Board of Managers after their election, the president shall (subject to the approval of the board) appoint as a Committee on Tin and Copper five members of the exchange, to whom shall be reported any question or dispute in regard to the deliveries, quality or weight of tin and copper. A majority of the committee shall constitute a quorum, and a decision of a majority present at any hearing shall be final and binding. They shall keep a record of their proceedings, and a fee of $15 shall be paid the committee for each reference case heard by them, to be paid by the party adjudged to be in fault, unless otherwise ordered by the committee.

COMMITTEE ON LEAD AND SPELTER.

2. At the first meeting of the Board of Managers after the election, the president shall, subject to the approval of the board, appoint as a Committee on Lead and Spelter three members of the exchange, to whom shall be reported any question or dispute in regard to the deliveries, quality or weight

of lead and spelter. A majority of the committee shall constitute a quorum, and a decision of the majority present at any hearing shall be final and binding. They shall keep a record of their proceedings, and a fee of $9 shall be paid the committee for each reference case heard by them, to be paid by the party adjudged to be in fault, unless otherwise ordered by the committee.

3. There shall be a call on tin, copper, lead and spelter each day, immediately after the call on iron, to be conducted by the secretary of the exchange, or, in his absence, by a person to be selected by a majority of members present. Spot shall be called first, and then the months in their order. All offers to buy or sell shall be in decimals, and no offer to buy or sell shall be entertained at a less difference than five-hundredths of a cent. per pound, nor for lots of less than 10 tons of 2240 pounds each of tin, of 25,000 pounds of copper, or of 20,000 pounds of lead or spelter.

The first offer to buy or sell at a price shall be accepted before subsequent offers at the same figures may be placed. Subsequent offers to sell at a lower or buy at a higher price shall vacate prior offers to sell at a higher or buy at lower prices. A transaction shall vacate all previous bids and offers. All disputes as to offers, acceptances or withdrawals (whether in time or not) shall be decided on the spot by the person presiding at the time, subject to an appeal to the members present. The appeal must be promptly taken, and a majority of the members present and voting shall settle the disputed point.

The secretary shall, immediately after each call, cause to be posted on the bulletin of the exchange the results of the call, setting forth the bidding and selling prices of the several articles dealt in, and the volume of transactions made.

At the close of the first and last calls each day, the settling prices of tin shall be announced by the person conducting the calls, subject to the appeal to the trade there assembled, and the prices so fixed shall govern all calls for margins. These prices shall also be used for settlement of contracts, and of differences on deliveries under contracts.

4. In offering to buy or sell metals on the exchange the quantities shall be specified.

MARGINS.

5. Either party to a contract, prior to or upon signing the same, shall have the right to call an original margin of $25 per ton of 2240 pounds of 1 cent per pound of copper, and of $10 per ton of 2000 pounds of lead and spelter; and either party may call for margins to meet variations in the market.

All margins on contracts shall be deposited in one of such trust companies, banks incorporated by the State, or National banks, as may have been designated for this purpose by the Finance Committee of the New York Metal Exchange.

When margins are called before 12 m. they must be deposited before 3 p. m. the same day; if after 12 m., they must be deposited before 11 a. m. the next day. In case of failure to deposit as above, then the party calling the margin shall notify in writing the party on whom the margins were called of his or their failure to make the required deposit; and if the margins are not then promptly deposited, the party calling the margins shall have the right to cover his or their contract at discretion for account of party failing to respond to the call for margins, and if covered, give notice in writing to that effect to the party in default.

In case of failure of any bank or trust company in which such margins have been deposited, it shall be to the loss of the party or parties to whom it may be found to be due, taking the average price of like deliveries on the day such bank or trust company failed as a basis of settlement.

When margins are called, original or for variations in the market, certified checks must be drawn to the order of the bank or trust company in which they are to be deposited. Checks must be sent to the secretary of the New York Metal Exchange, who shall deposit them and get a certificate of deposit, made payable on the order of the secretary of the New York Metal Exchange, and to the order of the buyer and seller. As soon as the secretary shall have received the certificate, he shall send it to the party making the deposit, and an abstract of the same to the party calling the margin. In settlement, the secretary shall ascertain the amount due each of the parties at interest, and shall indorse the amount due each on the certificate over his own signature, as instructed by both parties.

In case of the absence of the secretary, the president of the New York Metal Exchange or the chairman of the Finance Committee shall act in his stead under this rule.

DELIVERIES AND PAYMENTS.

6. Deliveries shall be made in public warehouse in the port of New York, unless otherwise specified.

Spot tin, copper, lead or spelter shall be delivered before 2 p. m. on the day succeeding the sale.

On contracts for future delivery, five days' written notice shall be given, exclusive of Sundays and legal holidays. All such notices for delivery shall be given between the hours of 11 a. m. and 2 p. m., and shall specify the warehouse where the goods are stored. When no notice is given, the delivery shall be made on the last day stipulated in the contract; or, if the same should be a Sunday or a legal holiday, on the day preceding. The party so delivering shall present to the first receiver a notice for delivery before 11 a. m. of the business day next before that of delivery.

Payments shall be made on transfer of documents conveying title before 2 p. m. of the day on which delivery is to be made.

WEIGHING.

7. All tin shall be weighed in parcels of 5 tons each. The weighing shall be done by weighers licensed by the New York Metal Exchange; or, as long as no such weighers have been licensed, by sworn city weighers. The seller or sellers shall pay for the weighing.

In case the receiver finds the weight to be incorrect, he may so notify the deliverer within five days after delivery, provided the tin has remained intact in the same warehouse. The deliverer shall then notify his weigher to re-weigh the tin jointly with the weigher of the receiver. In case the two weighers cannot agree, they shall choose a third weigher to decide between them, and abide by his decision. The weigher who will be found to have been wrong shall be liable for all expenses.

WEIGHTS.

When copper is in original casks, the original weights on the casks shall be considered as good.

BROKERAGE.

8. The brokerage on tin, copper, lead and spelter shall be one-half of 1 per cent., to be paid by the sellers.

SETTLEMENT OF CONTRACTS.

9. Contracts shall not be transferable, and any difference found to be due on settlement shall apply on account between the parties to the contract. Any party holding a contract against another, corresponding in all respects (except as to price) with one held by the other party against him, may close or cancel both by giving notice in writing to said party, and where it appears that several parties have contracts between each other, corresponding in all respects (except as to price), and that a "ring settlement" can be made, the party finding said "ring" shall notify all parties thereto, giving names, time of delivery, quantity and settlement price (which price must be within ¼ cent per pound of the market), and get their acknowledgment, from which time the said "ring" shall be in force, and cannot be broken by the failure of any of the parties therein, and all parties thereto shall be compelled to settle their differences on said contract with each other on the basis of the settlement price.

Where settlements of contracts for a specified month are made before maturity of said contracts, the legal rate of interest shall be allowed on the differences paid up to the first day of the maturing month.

All offers to buy or sell openly, for future delivery, on the floor of the exchange, must be open to the member first accepting such offer.

Verbal contracts, when satisfactorily proven, shall have the same standing as written contracts, but the claim under such contracts must be made on the day of the alleged transaction, or on the next business day thereafter.

Parties holding an option may, by giving the necessary notice or order, require the other party to receive or deliver on the first business day of the option, subject to the same conditions as on any other day covered by the contract.

CONSTRUCTION OF RULES.

10. All rules must be justly construed, and no property shall be rejected or condemned for mere technical reasons.

Co-operation.

The history of co-operative trading institutions has not been very encouraging to friends of the system, and it is not improbable that the want of success of these ventures has contributed in some degree to render the conservative public chary of embarking in enterprises bearing that name. The trading institutions referred to, however, were not founded on the true co-operative principle, as commonly understood, being originated merely in order to avoid the payment of what were considered excessive profits to retail tradesmen. Co-operative production, on the other hand, is based on the principle of admitting the workmen to a share in the profits derived from the work produced by them. It is needless to say that this system of co-operation has not as yet been sufficiently tried in England or America to afford data for deductions as to its practicability. Nevertheless, the believers in the system are as confident as ever of its success. A meeting of some friends of co-operative industry was recently held in London, at which the means of promoting co operative production among the working classes was discussed in a hopeful strain. Lord Carnarvon, who occupied the chair, referred to the success which had attended the trial of the experiment by M. Leclaire, in Paris. What M. Leclaire had done in France, he said, Englishmen should not despair of doing in their own country. He believed that by admitting workmen to a share in the profits the old antagonism of master and servant—of capital and labor—would be largely done away with, and work would be done quickly and well, instead of slowly and badly, because the credit of the house became a matter of interest to every workman. By this means economy would be introduced instead of waste, and little or no superintendence would be needed, because each man would become a superintendent, and would feel that bad or careless or wasteful work would represent so much taken from himself. Everybody interested in the industrial progress of the race will watch with deep interest the efforts made to bring about the condition of things hinted at in Lord Carnarvon's address.—*Bradstreet's.*

The Term "Penny" as Applied to Nails.—A subscriber in Iowa inquires how the word penny originated in its application to nails, and what its significance is. We print below an item which has already been in our columns, and which answers his inquiry: The origin of the terms "six-penny," "ten-penny," &c., as applied to nails, though not commonly known, is involved in no mystery whatever. Nails have been made a certain number of pounds to the thousand for many years, and are still reckoned in that way in England, a ten-penny being a thousand nails to ten pounds, a six-penny being a thousand to six pounds, a twenty-penny weighing twenty pounds to the thousand, and having just one-half the number of nails to the ten pounds of the ten-penny; and, in ordering, the buyer calls for the three-pound, six-pound or ten-pound variety, &c., until, by the Englishmen's abbreviation of "pun" for "pound," the abbreviation has been made to stand for penny, instead of pound, originally intended.

The Iron Age

AND

Metallurgical Review.

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The Supply of Bessemer Ores.

While European manufacturers are ruminating over the recently-published statements of the limited quantity of iron ore remaining in the once great Spanish, African and Italian deposits, and the possibility that at no distant day the diminishing supply may cause a serious advance in the price of ores suitable for use in the Bessemer converter, the manufacturers of America have cause to congratulate themselves on the increasing supply of these very ores on the Western Continent. For several years our people have been unable to procure a sufficient quantity of American ore from which to produce the Bessemer steel required here, and they were obliged to go to Europe and Africa and draw from the same source with European manufacturers. Agents of the American works visited all parts of this country, going even to very remote sections, but for a long time could find no very considerable undeveloped deposit of Bessemer ore. In order to control their ore supplies, several Western Bessemer steel companies made large purchases of ore properties in the Lake Superior district. For a time it was supposed that Bessemer steel works located in the East were badly situated with regard to competition from Western works on the one hand and foreign works on the other. Now, however, the aspect of affairs seems to be completely and happily changed. It has not been transformed with the aid of the basic process, although that was looked to as a possible means of enabling Eastern works to make steel more cheaply, for only one establishment is now making basic steel (the Pennsylvania Steel Works), and other works do not seem to be in a hurry to adopt the process. But the more hopeful future for the East comes from the recent discoveries of large deposits of good, pure ores within easy reach of the various works.

The nearest of these deposits is that of the Hudson River Iron Ore Co., located within a few miles of the Hudson River, in this State, and recently described very fully in our columns. Another large deposit, though known longer, but at the same time only recently brought prominently before the public, is that of the Chateaugay Ore and Iron Co., also in this State, and not too distant from furnaces making Bessemer pig iron for Eastern steel works. A third great deposit recently discovered is that of the Juragua Iron Co., on the island of Cuba, controlled by the Bethlehem Iron Co. and the Pennsylvania Steel Co., and consisting of immense hills of iron ore of the best quality and the greatest richness, which can be mined easily and shipped to this country cheaply. It is understood that the policy of these companies, including the Juragua Iron Co., will be to sell their ore at reasonable prices, and thus enable Eastern furnaces to make the best quality of pig iron at a cost much below that which they have hitherto been able to reach. It is possible that the effects of these large and cheap supplies of iron ore will not be seen until some time next year, when shipping facilities shall have been provided, but strenuous efforts are being made to get these ores into the market as soon as possible. Another great deposit of pure and rich magnetic iron ore is also understood to be awaiting development, which will furnish an additional supply of ore to Eastern manufacturers. It is located near Digby, Nova Scotia, within two miles of the southwestern coast, near a capacious harbor, and very accessible to vessels from the United States. All these deposits are near water, and thus the cheapest kind of transportation can be made available.

But the East is not alone in its discovery and development of large and accessible deposits of pure and rich iron ore. The West rejoices in the fact that immense fields of ore have been found to exist in Minnesota, only 72 miles from Lake Superior, in the Vermilion Lake district. All the characteristics of the Marquette County ores are repeated in the property of the Minnesota Iron Co., but the indications point to the existence of an even greater body of ore. The analyses which have been made of samples taken from all parts of the deposits show that it is strictly a Bessemer ore. These tremendeous accessions to the available supply of iron ore suitable for the manufacture of Bessemer steel in the United States have come most opportunely. The prices of iron and steel now rest on a lower plane than they have occupied for several years, but if cheap raw material can be secured there will be nobody to mourn for the departure of the days of high prices. Every manufacturer is more thoroughly satisfied with moderate profits and a steady demand than with large profits for a short season, to be followed by a period of almost complete inactivity.

The favorable condition of our Bessemer steel works, as regards the supply of the essential raw material, would also seem to determine the problem of the manufacture of basic steel in this country. Unless basic steel is required for special purposes in which a softer metal is needed than ordinary Bessemer steel, it will not be necessary for perhaps many years to erect basic steel works in those sections of the country which are now supplied with Bessemer steel works. The field for basic steel works is apparently the South and Southwest, where phosphoric ores are abundant and Bessemer ores are rare. But even in the South there are localities where Bessemer steel can be made to advantage. The Cranberry ore district of North Carolina is said to contain a much greater quantity of good Bessemer ore than was for a long time supposed, and it is within easy reach of good coking coal with which to smelt it. And, again, if the Cuban ore can be obtained cheaply, what is to prevent the location of Bessemer steel works in some part of Southern Alabama, where the Pratt coke and Cuban ore can be brought together and Bessemer steel produced for the Southern market? England has been slow to substitute the basic process for the acid process, but the United States, which now have an unbounded supply of ores low in phosphorus to draw from, will very probably be still slower.

An Anti-Tariff Plank Analyzed.

The Ohio representatives of one of the great political parties, in its platform for the Gubernatorial canvass now in progress, gives expression to the following opinions respecting the tariff, which have been accepted as foreshadowing the position which this party will take in its declaration of principles for the Presidential canvass in 1884: "We favor a tariff for revenue "limited to the necessities of a government "economically administered, and so adjusted "in its application as to prevent unequal "burdens, encourage productive interests at "home and afford just compensation to labor, "but not to create or foster monopolies." It would be difficult to string words together in a sentence which would really mean less than this. A tariff limited to the necessities of an economically administered government is a tariff for revenue only. So far it is comprehensible. But we fail to see how it is expected to so adjust such a tariff that it shall prevent unequal burdens, encourage domestic industry and afford just compensation to labor. This would seem to mean protection. The declaration that such a tariff should not create or foster monopolies is still more confusing. A revenue tariff, by discouraging domestic production and encouraging foreign trade to the fullest extent, inevitably tends to create and protect monopolies in the hands of foreign manufacturers. Under a protective tariff no one has any greater advantage in manufacturing than the possession of patents or the control of large capital and resources, properly acquired, account for. The field of manufacturing is open to any one who may engage in it, and, as the result, we see sharp and constant domestic competition, with resulting low prices and abundant supplies. It requires no further analysis to show that in this plank we have words skillfully used to conceal ideas. Let us have the ideas. As we interpret the language, it means substantially this: We favor a revenue tariff which shall be so arranged as to yield only so much revenue as the Government needs. A tariff for protection is an unequal burden in the shape of a tax levied on the consumer for the benefit of the manufacturer. We should be glad to see manufacturing prosper on a free-trade basis and labor earn good wages, but, as manufactures established under a protective tariff are monopolies, we are not willing to see the rates of duty high enough to afford any encouragement to those who may wish to invest their capital in manufacturing facilities. If they will do it without such encouragement, we have no objection.

We do not suppose that the Ohio Committee on Resolutions would have considered this paraphrase of their plank an acceptable substitute for the one drafted by them, but the two seem to mean the same thing; and ours has the advantage of stating the proposition so plainly that the average voter can understand it, while that of the platform does not.

Utilization of Coal Slack.

The question of profitably utilizing slack has of late come prominently to the front, and many and varied have been the methods proposed to effect the desired end. Going back for only a few years, we find that experiments have been made at different times with the object of establishing a basis for comparison between the commercial efficiencies of lump and dust coal, and though the results obtained were, as a rule, not such as to lend encouragement to the promoters of dust-coal schemes, later developments have imparted a more cheerful aspect to the question. The failure of dust coal to satisfy the imposed conditions was, however, due to a circumstance not dependent upon its calorific value, but one referred to below. In considering the matter, it should be remembered that the slack, or coal dust, may be used as a fuel in two different shapes—either in its natural condition or dust form, or in a compressed state, in which form it has of late been placed upon the market, under the name of artificial fuel. The experiments made in past years, and incidentally mentioned above, were perhaps scarcely calculated to demonstrate the success which might be attained in this direction. In fact, they were made with an entirely different end in view. When coal is burned in large lumps, a considerable amount of energy is expended in breaking it up into small pieces, and, in addition to this, there is some difficulty in the way of a ready combination of the carbon and oxygen, the interior portions of the coal being almost inaccessible to the air required for combustion. A little consideration will show that this difficulty is entirely avoided by the use of dust coal, the latter being blown into the furnace, together with the requisite air supply, a continuous process of firing being, moreover, readily maintained. This latter, it will be acknowledged, is an important item.

The system as here described, however, when applied to the raising of steam in a boiler, proved unsuccessful, and experiments which were made some seven or eight years ago by the United States Government with a different system yielded practically similar results. It is true the evaporative power of the dust fuel exceeded that of the lump coal by about one pound of water per pound of fuel, and, considered from this point of view alone, the experiments would have shown a gratifying success. It should be remembered, however, that the trials were made, not with the view of solving the question of how to dispose of our coal-dust accumulations in the mining regions, but simply whether it would not be more economical to use the coal in a dust than in a lump form. The lump coal was therefore first ground to a powder, and the expense of this operation raised the cost of the fuel somewhat above the price of the ordinary coal, and so far the scheme was a failure. But there is every reason to expect that with ordinary slack, such as is annually produced in large quantities, the method would prove successful. The same may perhaps be said of a number of other appliances or systems which have been brought out from time to time, and which in some cases have given very satisfactory results.

Of late, other processes—those by means of which the ordinary slack is pressed into suitable shapes, forming what is known as artificial fuel—claim public attention, and these, judging from comparatively recent developments, have given the most flattering results. In support of this we would direct attention to trials which were made some time since with such fuels, especially with that manufactured by Mr. E. F. Loiseau, of Philadelphia. Another process, that of W. H. Cory, promises equally successful results, thus opening a large field for operation in this line of industry. Without going into the details of manufacture, we may state that the methods proposed consist in mixing with the slack a certain proportion of suitable binding ingredients, and then pressing it into required shapes between rolls. The resulting fuel, for which an efficiency above that of ordinary coal is claimed, though still far from being extensively used, appears to have bright prospects ahead, and its more general application is only a question of time.

So far as the actual cost of producing this artificial fuel is concerned, the following table, prepared by Mr. Cory, will be found interesting and suggestive of the future in store for the fuel turned out by him:

State or Territory.	Number of mines.	Output of coal for census year 1880.	Average value of coal, per ton, at mine.	Average profit, per ton, on coal mined.	Estimated output of slack coal for census year 1880.	Cost of making into fuel.	Value of extra weight given to fuel by chemicals.	Value of extra 7 per cent. in lasting power over coal.	Net cost of fuel, per ton.	Profit, per ton, on fuel.	Excess of profit in favor of fuel as compared with coal mining.	Estimated profit on the slack output for 1880 if converted into fuel.
Pennsylvania—			$	$		Cts.	Cts.	Cts.	Cts.	$	$	$
Anthracite	275	27,433,320	2.00	.53	9,382,086	50	14	14	22	1.78	1.25	16,700,113
Bituminous	666	18,004,988	1.01	.17	3,100,997	50	5	7	38	.63	.46	2,268,626
Illinois	590	6,089,514	1.44	.23	1,217,902	50	7	10	33	1.11	.88	2,351,871
Ohio	618	5,932,753	1.29	.20	1,186,570	50	6	9	35	.64	.54	759,404
Maryland	32	2,227,844	1.16	.35	445,576	50	6	8	36	.80	.45	356,460
West Virginia	189	1,793,570	1.10	.09	358,514	50	5	7	38	.62	.53	222,278
Indiana	210	1,449,496	1.48	.25	289,899	50	7	10	33	1.15	.80	333,303
Iowa	227	1,442,333	1.72	.23	288,466	50	8	11	31	1.40	1.17	403,852
Kentucky	65	953,857	1.20	.23	190,770	50	6	8	36	.84	.61	160,246
Kansas	189	763,297	1.96	.91	152,659	50	10	14	26	1.70	.79	259,520
Missouri	144	543,994	1.91	.53	108,798	50	10	14	26	1.55	1.12	179,156
Tennessee	20	404,491	1.27	.24	98,898	50	6	8	36	.81	.57	79,107
Alabama	19	322,934	1.47	.14	64,586	50	7	10	33	1.14	1.00	74,628
Georgia	2	154,644	1.50	.79	30,928	50	7	10	33	1.17	.38	36,185
Michigan	6	100,800	2.23	.60	20,160	50	11	15	24	1.99	1.79	40,129
Virginia	4	40,520	1.29	.21	8,104	50	6	8	36	.84	.73	6,807
Wyoming Territory	6	580,596	.....	.....	Lignite	50	.....	.....	.....	.....	.....	.....
Colorado	25	462,747	.....	.....	Lignite	50	.....	.....	.....	.....	.....	.....
California	6	230,950	.....	.....	Lignite	50	.....	.....	.....	.....	.....	.....
Washington Territory	5	145,015	.....	.....	Lignite	50	.....	.....	.....	.....	.....	.....
Oregon	3	43,205	.....	.....	Lignite	50	.....	.....	.....	.....	.....	.....
Arkansas	14	14,778	2.27	.78	2,955	50	11	15	24	2.03	1.25	5,908
North Carolina	1	250	1.14	.43	50	50	6	8	36	.78	.35	185
Montana Territory	1	224	.....	.....	Lignite	50	.....	.....	.....	.....	.....	.....
Rhode Island	2	6,176	.....	.....	1,388	50	.....	.....	.....	.....	.....	.....
Nebraska	1	200	3.75	2.20	40	50	19	26	5	3.70	1.50	152
Utah	6	275,000	.....	.....	Lignite	50	.....	.....	.....	.....	.....	.....
Texas	....	No retrn.	.....	.....	Lignite	50	.....	.....	.....	.....	.....	No retrn.
Total	....	69,521,500	.....	.....	17,449,246	.....	.....	.....	.....	.....	.....	$23,218,100

Referring to this table, we would state that the figures giving the output of the coal for the census year 1880, the average value of coal per ton at mines, and the average profit per ton on the coal mined, were taken from the census bulletin of that year. So far as the estimated output of slack coal is concerned, Mr. Cory informs us that the figures, with the exception of those set against the Pennsylvania anthracite, which are from the coal census bulletin, were calculated at the rate of 20 per cent. on the coal return, the amount of slack made in mining bituminous coal being reckoned by authorities as ranging from 10 to 40 per cent. Referring to the ninth column of the table, Mr. Cory states that as the fuel will perform at least 7 per cent. more work than the large coal of the same description, it must be 7 per cent. more valuable, and hence this value is deducted from the cost of production. Taken all together, the table presents matters of considerable interest, showing that the subject of utilizing slack is worthy of more extended attention than it has thus far received, and future developments in this particular line are looked forward to with interest.

The New York Pilot Commissioners, at the recommendation of the Chamber of Commerce, have rescinded their resolution which prohibited the employment of steam propulsion in the pilot service. When, some two years ago, several steamship owners or agents entered into a private agreement with the pilots who owned boat No. 10 to substitute the tugboat Hercules for the sailing vessel before employed, the Commissioners refused to concede the right. They urged that the movement was ill-advised; that the effect of introducing steam would be to impair the efficiency of the service, besides being unjust to the men who had invested all their resources in the vessels which they navigated, and whose experience had been acquired through long years of hardship. On the question of compulsory pilotage, which is also a ground of dissatisfaction among the mercantile classes, they were prepared to compromise by accepting smaller fees. Up to the present moment, however, the pilot-boat fleet remains as before, precisely as when ocean steamers were unknown to the port. If, as alleged, a small number of quick-moving steamers would prove more efficient than the numerous boats now employed, the fact is susceptible of demonstration, and the change so long and so persistently urged is inevitable. As well might the grain shovelers fight the steam elevators or the slow-coach proprietors resist the advent of railroads. The request of the Chamber of Commerce is that that the Pilot Commissioners shall "without delay" authorize and encourage the introduction of steam pilot-boats. According to a decision of the Supreme Court, the Commissioners may withhold their approval as a condition precedent, but we may question the wisdom of provoking an appeal to Congress, with the possible result of the whole business being assumed by the General Government. In that case, New York would lose control of her own commerce, and politics would have more influence than skill in the pilot service.

The Outlook for Tin.

The remarkable steadiness in price which tin has maintained in the European markets for months past, in the face of unusually large shipments, both from the Straits and Australia, has been a puzzle to the metal trade. One of the London firms wrote, under date of June 7: "The tendency of the market "lately has, on the whole, been weak. There "is an absence of any strong demand in "America; dealers there seem contented for "the present to work with minimum stocks. "The figures of available supply on May 31 "are without material change from those at "the end of the preceding month. The shipments from Australia turned out unusually "heavy, and the Straits shipments since "January 1 to end of May are large. But if "we extend the time of comparison to a "full twelvemonth ending on May 31, it is "seen that the increase in supplies from "these parts is very moderate." The exact comparison is as follows:

SHIPMENTS—YEAR ENDING MAY 31.

	Straits. Tons.	Australia. Tons.	Totals. Tons.
1883	13,500	10,700	24,200
1882	12,600	10,100	22,700
1881	11,000	9,400	20,400

FIVE MONTHS—JANUARY 1 TO JUNE 1.

Straits and Australia. Tons.		Deliveries in England and Holland. Tons.
1883	1883	9,240
1882	1882	9,219
1881	1881	9,095
1880	1880	8,763
	1879	8,218

The above statistics show that, while the deliveries have barely held their own, the shipments have so far this year been 30 per cent. larger.

On turning our attention to the visible supply in England, Holland and the United States on June 1, and the price of Straits in London on that date, we find:

1883.	1882.	1881.	1880.
Tons.	Tons.	Tons.	Tons.
19,417	18,045	19,279	21,675
£95. 10/	£97. 10/	£87. 15/	£72

On June 1, 1879, the price was £66. 5/, and in 1878, £63. The statistical position is therefore worse than it was two years ago, while the price was, in June, this year, about 10 per cent. higher. It is speculation alone that is keeping up the price, and if this support were withdrawn we do not see why, in the present condition of the markets on both sides of the Atlantic, the price should

not decline. It will be curious to watch how long, under existing circumstances, the figures can be upheld where they are. At any rate, the visible supply on this side is sufficiently large for four or five months' requirements.

IMPORT OF TIN INTO THE UNITED STATES DURING THE FIRST TEN MONTHS OF FISCAL YEAR.

	1883. Cwt.	1882. Cwt.
Import	208,786	157,565
Less re-export	893	22,233
Net import	207,883	135,332
Equal to tons	10,394	6,766

While our consumption at the high price ruling has been steadily on the decrease, we have during the ten months imported 54 per cent. more tin than during the coresponding period of the previous fiscal year. An unhealthier state of affairs in an imported article whose uses greatly depend on the price, it would be difficult to find. From whatever side we study the actual position of tin we can hardly find a redeeming feature, except, perhaps, that money is easy; but even this is in a great measure the result of extreme dullness in trade.

It is worthy of mention here that the production of tin on the Island of Billiton in Netherland India, which of late years had been falling off, and declined from 93,469 piculs in 1879 to 66,331 in 1881, is increasing, the island turning out last year 70,081 piculs of 134 pounds, or 4190 tons of 2240 pounds. The fact is that in all Eastern tin-producing countries there prevails the greatest activity, no doubt chiefly due to the high price the metal is maintaining.

Newspaper Reports.

Mr James I. Bennett of Pittsburgh, is reported by a local newspaper to have expressed himself as follows in an interview with its representative:

"We have not asked for an extension from our creditors, nor do we propose to. I am at a loss to understood why the newspapers give currency to such rumors in regard to this house, unless they want to assist in breaking up every iron house in the city. If it hadn't been for the newspaper reports, which were started by a lot of d—d scoundrels who speculate in oil, in regard to the affairs of the Graffton Iron Co., we would have experienced no difficulty in arranging the affairs of that company. I tell you what it is," continued Mr. Bennett, excitedly, as he mopped the perspiration from his brow, "if newspaper editors and reporters persist in picking up every idle rumor affecting the private affairs of business men and others they may look for just the same reception as Dukes received at the hands of Nutt. Do they stop to consider what the effect is of publishing mere rumors? What interest has the public in our business, those who read newspaper accounts of our private affairs—people whom we don't even know when we meet them on the street? This is a matter that involves the bread and butter of 15,000 people. We don't know where these rumors originate, but we know what their effects are, and the newspapers ought to before spreading them broadcast."

We have no doubt that Mr. Bennett felt very strongly on the subject concerning which he spoke, and that what he most desired was that the newspapers would refrain from making any mention of the affairs of Graff, Bennett & Co. But to close its eyes to matters of news and affect an ignorance of matters which were the subject of current rumor, is no part of the business of a newspaper. The affairs of a great iron concern are matters of public interest in the largest sense. The wisest and most business-like course which Mr. Bennett could have taken in this matter would have been to have told the truth, so far as the public were interested in knowing it. When newspaper reporters are denied information which they seek at headquarters, they are much less to blame than they might otherwise be for giving credence to current rumors and plausible statements made without the sanction of authority. We do not mean by this that a merchant or manufacturer in financial embarrassment is under obligations to open his ledger for the inspection of every newspaper reporter who may wish to see it, but self-interest should prompt him to answer every proper question truthfully. Scolding at the newspapers only makes matters worse, and confirms the popular belief that the rumors are well founded. It is in this, as in everything else—the man who loses his temper loses his case. The business of a newspaper is to print news, and if this fact is recognized, it will not require a very violent exercise of the reasoning powers to bring one to the conclusion that, as there is no such thing as concealment possible, it is a great deal wiser to aid the newspaper makers in presenting the truth than to force them to trust to rumors and statements that may exaggerate or distort the facts, or that may really have no foundation whatever.

Referring to the influx of population, the appended figures, giving the immigration at all the ports and districts in the United States for the month of May, and also the relative totals for each month since January 1, may prove of interest:

	1880.	1881.	1882.	1883.
January	12,000	13,134	18,459	12,940
February	14,000	15,075	28,247	17,065
March	40,613	44,125	65,234	38,730
April	46,821	95,392	104,274	78,475
May	55 250	117,482	141,035	90,601
Five months	168,684	285,206	357,270	246,811

Comparing the returns for the present year with those of 1882 and 1881, we find a marked falling off, especially from the figures of 1882, the decrease amounting to almost 33 per cent. Further particulars now at hand show that of the total number which arrived in May, somewhat over 68,000 came to this city, the remainder going to Boston, Philadelphia and Baltimore. As to nationality, we find Germany, as usual, to be most largely represented, with a total of 29,787, the smallest proportion, so far as available statistics go, being furnished by Poland, the immigrants from that source numbering 183.

Pauper immigration is very properly receiving the attention of the Government at Washington. If it shall appear that the impoverished and otherwise helpless subjects of any other Government are being landed on our shores, only to become a burden on the community, it will become the duty of the Executive and State authorities to protest against the violation of any of the obligations of national friendship. The industrial classes of this country are not called upon to compete with pauper labor on their own ground. A summary way of dealing with "assisted emigrants" is to assist them home again.

On the opening of the second days' session of the Mechanical Engineers the president appointed William P. Trowbridge, Coleman Sellers, John E. Sweet, C. J. H. Woodbury and J. C. Bayles as a committee on the revision of the rules. It was rather a remarkable feature of the meeting that no motion was made from beginning to end having any bearing on a revision of the rules or a change in the organization of the society. The committee for the nomination of officers for the coming year are Washington Jones, John C. Hoadley, H. R. Towne, S. P. Wellman and Irwin M. Scott.

The railroad companies on the 22d inst. made an important reduction in the rates for transporting rails and pig iron westward by the trunk lines. The articles mentioned and several others of the coarser kinds of merchandise are transferred from the fourth class to a special or fifth class, on which the rate is fixed at 25 cents per 100 pounds, instead of 35 cents, as heretofore. Doubtless this step is taken in competition with the canal, which has been taking a large share of the business under the no-toll arrangement.

We give elsewhere in these columns the new rules adopted for the government of the Metal Exchange. The novel feature of regular calls of metals, in conjunction with a system of trading in options and in margins, went into effect on Monday and was pronounced a success. There was a goodly attendance of members and considerable animation on the floor.

It costs $3,000,000 per annum in wages alone at the United States navy yards to repair six men-of-war. It is not surprising that Secretary Chandler has resolved to cut down expenses.

Conference of Iron Manufacturers.

In response to recent circulars, a meeting of manufacturers of bars, plates, &c., was held at the rooms of the American Iron and Steel Association, Philadelphia, on Thursday, June 21, 1883. Oliver Williams was chosen president and Wm. E. S. Baker secretary of the meeting. Upon reading the call for the meeting, 20 mills responded.

The secretary submitted a table showing the duty imposed by the old tariff and the new upon every size on the Eastern schedule, including the following:

Rounds and squares, ¼ to 2 inch, no reduction.

Flats, 1 to 6 inches, from ⅜ to 2 inch, $\frac{5}{10}$ reduction.

Small rounds, $\frac{5}{10}$ to $\frac{4}{10}$ reduction.

Rounds and squares over 2 inches, $\frac{5}{10}$ reduction.

Small squares, $\frac{4}{10}$ reduction.

Flats less than 1 inch wide, $\frac{4}{10}$ to $\frac{4}{10}$ reduction.

Flats above 6 inches wide, $\frac{7}{10}$ reduction.

Bands and hoops, about $\frac{5}{10}$ reduction.

Ovals and half-ovals, $\frac{4}{10}$ reduction.

After discussing the subject of a new schedule of extras, and in view of the fact that the extremely low prices of iron at home and high prices abroad would prevent importation at present, on motion it was

Resolved, That we reaffirm the Eastern schedule as adopted October 16, 1879, except as to flats wider than 6 inches, and as to bands and hoops.

Resolved, That the extras on flats larger than 6 inches be left to the discretion of the individual mill-owners.

Resolved, That the extras on bands and hoops be referred to a special committee for revision, who are to report at a future meeting. The committee consisted of Messrs. Nevegold, Cooley and Williams.

Resolved, That we recommend a strict adherence to the Eastern schedule, and recommend that course to the Eastern mill-owners as their only safety from loss in times of depression.

It was here reported that severe cutting in the extras had been resorted to, chiefly by the seaboard mills, and that it resulted from want of an organization where the members could confer and consult with each other. On motion, it was

Resolved, That we recommend the calling of a meeting to revive the Eastern Iron Association, without salaried officers, for purposes of consultation upon various matters affecting the interests of the business.

Resolved, That when we adjourn, we adjourn to meet at call of the same Executive Committee, who are hereby continued, to consider the subjects holding over from this conference.

With thanks to the American Iron and Steel Association for the use of their office, and special thanks to the courteous and indefatigable secretaries, whose untiring industry and efforts in behalf of the iron and steel interests of America are apparent, but too frequently unappreciated, the meeting adjourned to meet at call of the Executive Committee.

Executive Committee. { Oliver Williams, Chairman, A. H. Peacock, J. Avery Richards, Jesse L. Cooley, Wm. E. S. Baker, Secretary.

Eastern Iron Manufacturers' Schedule of Extras.

The following table gives the Eastern iron manufacturers' minimum extra prices above the base bar price, with the duty under the old and new tariff for the various sizes:

		Old tariff.	New tariff.
* Round and square iron, ¼ to 2 inches	$22.40	$22.40	
* Flat iron, 1 to 4 inches x ⅜ to 1½ in.	22.40	17.92	
* Flat iron, 4⅛ to 6 in. x ⅜ to 1 inch	22.40	17.92	
* Regular bar sizes not extra.			

ROUND IRON, EXTRA.

	Per lb.	Per ton.		
⅜ and 11-16 inch	1-10¢	$2.24		
½ and 9-16 "	2-10¢	4.48	33.60	24.64
7-16 "	4-10¢	8.96		
⅝ "	5-10¢	11.20		
5-16 "	6.10¢	13.44	33.60	26.88
¼ and 9-32 "	7-10¢	15.68		
2⅛ inches to 2⅞ inches	1-10¢	2.24		
3 " 3½ "	3-10¢	6.72		
3⅜ " 4 "	5-10¢	11.20		
4⅛ " 4½ "	6-10¢	13.44		
4⅜ " 5 "	8-10¢	17.92	33.60	22.40
5¼ " 5½ "	1¢	22.40		
5¾ " 6 "	1 5-10¢	33.60		
6¼ " 6½ "	2¢	44.80		
6¾ " 7 "	2 5-10¢	56.00		

SQUARE IRON, EXTRA.

⅜ and 11-16 inch	1-10¢	2.24		
½ and 9-16 "	2-10¢	4.48		
7-16 "	4-10¢	8.96	33.60	24.64
⅝ "	5-10¢	11.20		
5-16 "	6-10¢	13.44		
¼ and 9-32 "	7-10¢	15.68		
2⅛ inches to 2⅞ inches	1-10¢	2.24		
3 " 3½ "	3-10¢	6.72		
3⅜ " 4 "	5-10¢	11.20		
4⅛ " 4½ "	6-10¢	13.44		
4⅜ " 5 "	8-10¢	17.92	33.60	22.40
5¼ " 5½ "	1¢	22.40		
5¾ " 6 "	1 5-10¢	33.60		
6¼ " 6½ "	2¢	44.80		
6¾ " 7 "	2 5-10¢	56.00		

FLAT IRON, EXTRA.

1 to 6 inches x ¼ and 5-16 inch	2-10¢	4.48		
1 x 3-16	4.10¢	8.96	22.40	17.92
⅞ x ⅜ to ¾	4-10¢	8.96	28.00	26.88
⅞ x ¼ and 5-16	5-10¢	11.20		
⅞ x 3-16	6-10¢	13.44	33.60	24.64
¼ x ⅜ to ½	4-10¢	8.96	28.00	26.88
¼ x ¼ and 5-16	5-10¢	11.20		
¼ x 3-16	7-10¢	15.68	33.60	24.64
⅜ x ⅜ to ½	5-10¢	11.20	28.00	26.88
⅜ x ¼ and 5-16	7-10¢	15.68		
⅜ x 3-16	9-10¢	20.16	33.60	24.64
½ x ¼ to ⅜	1 1-10¢	24.64	28.00	26.88
½ x 3-16	1 2-10¢	26.88	33.60	24.64
2⅛ inches to 4 x 1⅛ to 2 inches	2-10¢	4.48	22.40	17.92
2⅛ " 4 x 2¼ to 3 "	3-10¢	6.72	33.60	17.92
4⅛ " 6 x 1⅛ to 2 "	2-10¢	4.48	22.40	17.92
4⅛ " 6 x 2⅛ to 3 "	4-10¢	8.96	33.60	17.92
6½ inches x ⅜ to 1 inch	2-10¢	4.48		
6½ " x 1⅛ to 2 "	4-10¢	8.96		
7 " x ⅜ to 1 "	3-10¢	6.72		
7 " x 1⅛ to 2 "	4-10¢	8.96	33.60	17.92
7½ " x ⅜ to 1 "	5-10¢	11.20		
7½ " x 1⅛ to 2 "	6-10¢	13.44		

FLAT IRON—Continued.

8 " x ⅜ to 1 "	4-10¢	$8.96		
8 " x 1⅛ to 2 "	6-10¢	13.44		
8½ " x ⅜ to 1 "	7-10¢	15.68		
8½ " x 1⅛ to 2 "	8-10¢	17.92		
9 " x ⅜ to 1 "	6-10¢	13.44		
9 " x 1⅛ to 2 "	8-10¢	17.92		
10 " x ⅜ to 1 "	8-10¢	17.92		
10 " x 1⅛ to 2 "	1¢	22.40	$33.60	$17.92
11 " x ⅜ to 1 "	9-10¢	20.16		
11 " x 1⅛ to 2 "	1 1-10¢	24.64		
11½ " x ⅜ to 1 "	9-10¢	20.16		
11½ " x 1⅛ to 2 "	1 1-10¢	24.64		
12 " x ⅜ to 1 "	9-10¢	20.16		
12 " x 1⅛ to 2 "	1 1-10¢	24.64		
1 to 12 inches wide x ¼ and 5-16 thick, 2-10 extra above ⅜ thick, $4.48.				

BAND AND HOOP IRON, EXTRA.

1 to 6 inches, Nos. 6 to 10	4-10¢	8.96	28.00	22.40
1 to 6 " Nos. 11 to 12	6-10¢	13.44		
1 to 6 " Nos. 13 to 16	8-10¢	17.92	26.88	33.60
1 to 6 " Nos. 17 to 20	9-10¢	20.16		
⅞ inch, Nos. 8 to 10	7-10¢	15.68	28.00	22.40
⅞ " Nos. 11 to 12	9-10¢	20.16		
⅞ " Nos. 13 to 16	1¢	22.40	33.60	26.88
⅞ " Nos. 17 to 20	1 1-10¢	24.64		
¾ " Nos. 8 to 10	8-10¢	17.92	28.00	22.40
¾ " Nos. 11 to 12	1¢	22.40		
¾ " Nos. 13 to 16	1 1-10¢	24.64	33.60	26.88
¾ " Nos. 17 to 20	1 2-10¢	26.88		
⅝ " Nos. 8 to 10	1¢	22.40	28.00	22.40
⅝ " Nos. 11 to 12	1 3-10¢	29.12		
⅝ " Nos. 13 to 16	1 5-10¢	33.60	33.60	26.88
⅝ " Nos. 17 to 20	1 7-10¢	38.08		
½ " Nos. 8 to 10	1 3-10¢	29.12	28.00	22.40
½ " Nos. 11 to 12	1 6-10¢	35.84	33.60	26.88

OVAL IRON, EXTRA.

⅞ inch to 1¼ inch	4-10¢	8.96		
¼ " 13-16 inch	5-10¢	11.20		
⅝ " 11-16 "	6-10¢	13.44		
½ " 9 16 "	8-10¢	17.92		
⅜ " 7-16 "	1¢	22.40		

HALF-OVAL AND HALF-ROUND IRON, EXTRA.

⅞ inch to 1¼ inch	5-10¢	11.20	28.00	26.88
¼ " 13-16 inch	6-10¢	13.44		
⅝ " 11-16 "	7-10¢	15.68		
½ " 9-16 "	9-10¢	20.16		
⅜ " 7-16 "	1 1-10¢	24.64		
All sizes not enumerated to be subject to special agreement.				

Extra, for cutting ordinary bars to specific lengths, from 1-10¢ to 3.10¢ per pound, according to length and size, as may be agreed upon.

DECIMAL SYSTEM LIST, PER TON OF 2240 POUNDS.

Adopted by the association in selling Iron, October 17, 1871.

1-10¢ =	$2.24	6-10¢ =	$13.44
2-10¢ =	4.48	7-10¢ =	15.68
3-10¢ =	6.72	8-10¢ =	17.92
4-10¢ =	8.96	9 10¢ =	20.16
5-10¢ =	11.20	1¢ =	22.40

The Cleveland Meeting of the Mechanical Engineers.

(Continued from page 19, June 21.)

Resuming our account of the recent meeting of the American Society of Mechanical Engineers, at Cleveland, Ohio, the excursions to which the whole of Thursday was devoted are next in order. A large party, composed of gentlemen exclusively, met at the Union Depot at about 9 o'clock, and promptly at 9.15 a special train, which had been placed at the society's disposal, took the assembled members on board, and in a few moments later stopped at the works of the Otis Iron and Steel Co. The visitors were received here by Mr. Charles A. Otis, president of the company; Mr. J. K. Bole, secretary; Mr. Thomas Jopling, treasurer, and Mr. S. T. Wellman, superintendent and manager. The process of rolling steel plate from the ingots was first examined. The party then passed into the engine-room, where the high-speed engine used by this company was in motion. Next, the department where the ingots are forged itno axles and other work was visited, after which the process of casting ingots was noticed. A feature that attracted marked attention was the process of puddling by machinery. While watching some of the operations in this establishment some molten metal was accidently spilled near where a large party were standing. The fiery globules flew in all directions, lighting on the faces and clothing of many of the visitors, causing a general stampede. Fortunately no one was seriously hurt, though a great many where speckled.

The train was again boarded and the Cleveland City Forge and Iron Co's works were reached. The visitors were here received by Mr. L. M. Coe, vice-president and general manager of the company, and G. F. Ely, secretary. This establishment is among the largest forges in the United States. The business is the manufacture of railroad-car axles, locomotive driving-wheel axles and marine shafting. The process of heading linchpins and forming and welding links from straight pieces of iron was watched with great interest. The helve hammer used by this company is the largest in the United States, and was manufactured by the Cuyahoga Steam Furnace Co. From this establishment the party walked to the works of the Cummer Engine Co. Here they were received by Mr. F. D. Cummer, vice-president of the company, and Mr. Wm. M. Barr, superintendent and engineer. The establishment, which is new, is complete in all modern mechanical appliances. The business is the building of engines for general use and also for driving dynamos. The working of a complete engine recently finished, examining the construction of some partially-built engines and visiting the well-lighted drawing-room of the establishment were some of the features of the visit.

Again boarding the train, the Union Steel Works were visited. The party were shown through this establishment by Mr. Fayette Brown, president, and Mr. J. A. Bidwell, superintendent. The machinery of this establishment was a subject of deep interest to all present. All the machines are automatic self-feeders, and the accuracy and rapidity with which they do their work is marvelous. The next place visited was the Brush Electric Works, where Mr. M. D. Leggett, president, Mr. G. W. Stockly, vice-president and general manager, and Mr. N. S. Possons, superintendent, received the visitors. It was rather unfortunate that the visitors arrived during the dinner hour, when none of the lathes and other machinery were in motion. However, a short time was spent in examining the machinery of the establishment and the construction of dynamos in process of making. The engine-room, with its large engine, attracted marked attention. The portion of the works where the storage batteries were located was not inspected. Messrs. Warner & Swasey next received the engineers at their establishment, where they exhibited the running gear for a new dome which they are constructing for the McCormick Observatory of the University of Virginia. This is 45 feet in diameter, and weighs 10 tons. The engineers were next escorted through the immense works of the Cleveland Malleable Iron Co. by Mr. A. A. Pope, president, and Mr. E. W. Hotchkiss, superintendent. The molding processes employed in this concern and the general manipulation of material were examined with interest. The party next visited the works of the Cleveland Rolling Mill Co., at Newburg. They were received by Mr. Wilson B. Chisholm, the general manager, assisted by Mr. John Walter, the superintendent, Mr. E. H. Martin, chief engineer, and Mr. W. J. Hayes, manager of the wire department. The programme allowed only one hour for the examination of these works, which proved considerably too short. The process of rolling plates and casting ingots was noted, and then the remainder of the time was spent in the wire department. The processes here examined seemed to interest the visitors quite as much as anything previously inspected.

The next feature of the excursion was a bountiful lunch which had been provided. A party of half a dozen Newburg ladies waited on the table. After discussing a very inviting spread, the excursionists boarded a train on the N. Y., P. & O. Railroad, and visited the Central Furnace. The Water Works were also visited, after which the party returned to the Central Depot, when such as desired visited the viaduct under the guidance of City Engineer Morse. The ladies accompanying the engineers enjoyed an excursion in various directions, under the auspices of a committee of Cleveland ladies, among whom may be mentioned Mrs. M. A. Hanna, Mrs. William Chisholm, Mrs. H. B. DeWolf, Mrs. J. F. Holloway, Mrs. F. Hickox, Mrs. Charles Gordon and Mrs. R. R. Rhodes.

Thursday Evening Session.

The society was slow in coming together in the evening, all being pretty well tired out by the day's sightseeing. It was 8.30 before the meeting was called to order. The first paper read was by Mr. Oberlin Smith, of Bridgton, N. J., the subject being "Spiral Springs, Compressive and Tensile." The paper was discussed by Mr. C. H. Robinson, of New York City, and Mr. Thomas B. Richards, of Philadelphia, the latter saying that the Southwark Foundry and Machine Co. had abandoned the use of push springs. Professor Webb, of Cornell University, and Mr. C. J. H. Woodbury, of Boston, referred some length to authorities upon the subject, and Mr. J. J. Grant, of Flushing, New York, spoke in favor of push springs. President Leavitt closed the remarks with a few observations on the formula of a brass push spring used in pump work. Mr. G. C. Henning, of Pittsburgh, Pa., followed in a paper entitled "Some Notes on Steel," after which Mr. W. F Durfee, of Bridgeport, Conn., read a paper the subject of which was "Machinery for Maneuvering Clutch Couplings." He illustrated his paper by sketches of a machine he had invented and used in his business. The following papers were then read by title: "Economy in Subdivision, in Installation and Operation of Machinery at Varying Demand," by J. L. Hornig, of Jersey City; "Ingot Cranes," by Gram Curtis, of New York; "On a New Method of Constructing a Crank Shaft," by J. E. Sweet, of Syracuse, N. Y.; "Note on the Water Hammer in Steam Pipes," by R. H. Thurston, of Hoboken, N. J.; "A New Form of Balance Dynamometer," by S. S. Webber, of Lawrence, Mass.; "Some of the Mechanism Employed in Multiplex Telegraphy," by T. W. Rae, of New York; "On a New Method of Casting Flange Pipe," by J. E. Sweet, of Syracuse, and "Note on the Effect of Prolonged Stress on Iron," by R. H. Thurston.

Pending the adjournment resolutions were adopted thanking the citizens of Cleveland for the kind treatment extended to the society on the occasion of its visit to that city; to the proprietor of the Opera House for the use of that building on the occasion of the citizens' reception; to the various manufacturing establishments which had kindly invited the engineers to visit their works, and to the executive committee of the local members for the complete arrangements made for the entertainment of the society, and the most admirable manner in which they had been carried out during the day devoted to excursions. The Civil Engineers' Club and the ladies of the city were also thanked before adjourning the convention. The chairman said that all must regret the close of the meeting, which was the red-letter session of their history. The success of the local committee had gone beyond their most sanguine expectations. The convention then adjourned to meet in New York City for the regular annual meeting in November.

Fire-Proof Building.

In our last issue we gave Mr. Ward's conclusions upon the subject of béton construction

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I am the sole owner of this patent, and sole manufacturer of these fasteners, and all persons are hereby notified of this fact. Any parties infringing will be dealt with according to law. Parties who have been buying and selling the "Practical Fastener," so-called, will do well to heed the warning. Orders from the trade respectfully solicited. Circular with price list mailed on application.

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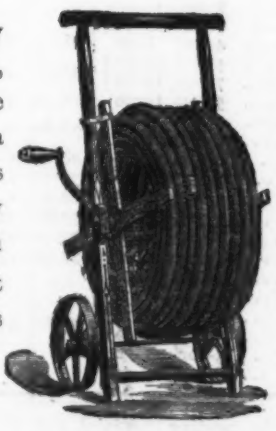
HOSE REELS.

NO. 1 HOSE CARRIAGE.

This Carriage will easily carry seventy-five feet of ¾-inch 3-ply hose, and while one hundred feet can be reeled upon it, we recommend a larger size for that quantity. As shown in the engraving, it has fifty feet of heavy ¾-inch 3-ply hose upon the reel. It is finished in bright colors, stands up firmly, and occupies but little space.

PRICE, - - $2.45.

NO. 2 HOSE CARRIAGE.



The engraving shows a Carriage with 150 feet of heavy ¾-inch 3-ply hose wound upon the reel; 200 feet can be easily coiled upon it. It is light, compact, and convenient to hand. For shipping great distances, this size, in common with the others, can be packed in crates, not set up, and occupy the least possible space.

PRICE, - - $2.80.

NO. 3 HOSE CARRIAGE.

In the engraving, this Carriage is shown with 200 feet of heavy ¾-inch 3-ply hose upon the reel. On account of the elevated position of the reel, this Carriage is convenient to handle; the stooping position required by some patterns of hose carriages, or in coiling hose in the old-fashioned way, is avoided. The axle is of wrought iron and firmly set.

PRICE, - - $4.20.

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CHAMPION ONE-MAN SAW

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reinforced by iron. The discussion which followed the presentation of this paper at the Cleveland meeting brought cut some facts that are of interest to our readers at large. Mr. Ward's paper gave details of the method which he has employed in constructing his own house from iron and béton. This building has achieved a very considerable reputation. Essentially it consists of a house of béton, with a sufficient amount of iron for the tie-bars, I floor beams, &c., to prevent checking in the cement when hardening, and to afford increased strength in certain portions. One very valuable feature was brought out—that a beam formed by a combination of cement and iron was considerably stronger than the iron alone, the form being so designed as to subject the iron to a tensile and the cement to a compressive strain. Both walls and floors were supplied with flues through which the hot air for heating was conducted and the water pipes lead from various parts of the building. As might be expected, the house is thoroughly fire-proof throughout. The warming, on account of its thoroughness, is rather greater than though an ordinary furnace had been used, but probably for the amount of heating done quite as economical. This form of construction offered unusual facilities for the formation of water tanks, which were arranged on a rather unusual principle. The rain-water tank especially was supplied by an inverted syphon, which was tapped at various points for the household supply, a system which presents some advantages in preventing a stagnation of water in the supply pipe. Sections were given showing the method of construction, and also a photograph of the house, which, though simple in its architectural details, is very striking. Mr. Ward applied this method of construction, in regard to which ample details were given, to a variety of purposes, and among others a foundation for a straight-line engine. In discussing this question reference was made to a fire-proof building just completed in Philadelphia, where, by covering the exposed surfaces of wood with wire lath, and plastering upon this, protection against fire had been effected without any very considerable expense.

In reply to a question Mr. Woodbury said that he had never known a plank floor in which an inch or so layer of mortar was included, to burn through, even though an extremely hot fire was raging above it. One case was cited where the whole roof of a building burned off with so fierce a heat as to endanger surrounding property, and yet the fire did not penetrate the floor beneath, which was constructed in this way. If the fire should take place beneath, it would undoubtedly destroy the columns, if of iron, long before the floor could be penetrated, while columns of wood would stand many hours' exposure to an intense heat before yielding. The president stated that the Zoölogical Museum at Cambridge was constructed with wooden beams protected by a fine cover of mortar attached to a wire lathing. At this point Mr. Root said:

"Mr. Ward being a neighbor of mine, I have been somewhat familiar with that house during the whole time of its construction. After it was completed he erected a large flag-staff right in the center of the tower. This staff was supported by iron braces to to hold it in place. There came up a very severe thunder storm, and the lightning struck this staff and shivered it into ten thousand pieces. The splinters fell all over the grounds, all around the house. A short time after that, hearing that the staff had been struck, in company with Mr. Ward, I went up to the top of the tower to see what damage had been done. We found two or three little splinters of cement, perhaps twice as big as your thumb nail, disturbed, where the electricity had passed down into the cement along the rods or braces that supported the flag-staff, but otherwise we could not find any damage done except to the flag-staff. So I told Mr. Ward that he had not only got a fire-proof house, but he had got a lightning-proof house. I thought that was a pretty good test of it."

The Mortality Statistics of the War.

The latest of the "Campaigns of the Civil War," published by Charles Scribner's Sons, New York, is the "Statistical Record of the Armies of the United States," by Captain Charles Pensterer, and is an especially valuable work. It contains a very careful and accurate summary of all the statistical and chronological facts pertaining to the War of the Rebellion. What is of special interest is a statement of the absolute cost of life of the struggle to maintain the Union. Under this head the following table and accompanying remarks are presented:

	Regulars.	White vol's.	Col. tr'ps.	Total.
Killed in battle	1,455	41,369	1,514	44,238
Died of wounds and injuries	1,174	46,271	1,760	49,205
Suicide, homicide, execution	37	442	52	526
Died of disease	3,009	153,925	29,212	186,216
Uuknown causes	159	23,188	837	24,184
Total	5,724	265,265	33,380	304,369

The Adjutant-General reports that 26,168 men are known to have died while prisoners of war in the hands of the enemy. The latest report from the War Department on record makes the total loss by death 303,504, but the foregoing summary makes it 304,369—the difference arising from the fact that the Surgeon-General reports over 900 more regulars died during the war than the Adjutant-General. There were 280,040 wounded in battle, and 184,791 missing or captured. Taking the whole number of men furnished by the States and Territories during the war, it would appear that out of every 65 one was killed in action; out of every 56 one died of wounds; out of every 13 one died of disease; out of every 9 one died while in the service; out of every 10 one was wounded in action. (A great number of men only enlisted for a short service, and then served no more; but there were several hundred thousands who re-enlisted, and, as their names appear twice or oftener on the rolls, the ratio of deaths and casualties to the whole number of men should be greater than the above table would indicate.) And as a great many of the men never came near the front, or were subjected to the risks of battle, the proportion of casualties to those who were actually in the field was, of course, much greater.

It is assumed that 662 of every 1,000 were at the front and took part in the operations. Of these one in every 42.7 was killed in battle; one in every 38.1 died of wounds; one in every 13.5 died of disease. So that of every 9.2 men at the front, one lost his life from some cause or other. One man in every seven who was captured died, but this gives a misleading idea of the proportion of deaths, since nearly all the prisoners captured on both sides prior to July 1, 1863, were paroled immediately—generally on the field of battle. Of those taken subsequent to July 1, 1863, and held in confinement, at least two out of three died. Of every four men who so much as set foot in Andersonville one died before getting out, and taking the deaths after being removed to other prisons, and after being released, it is pretty certain that in all four out of five died from the effects of imprisonment.

Quicksilver Trade.—The delivery of quicksilver at San Francisco for May amounted to 2657 flasks, of which 1205 flasks came from the New Almaden Mine. The exports for May were 1392 flasks, valued at $37,115. The market was weak throughout the month, especially during the last half, when sales were made down as low as $26.75 per flask, or a fraction less than 35 cent per pound. The deliveries for the first four months of the year are reported by the *Commercial News* at 21,171 flasks, against 18,000 flasks for the same time last year and 23,100 flasks in 1881. The exports from San Francisco by water for the five months ending May 31 were as follows:

	Flasks.	Value.
New York	200	$6,000
Hong Kong	9,525	235,892
Japan	490	13,230
New Zealand	50	1,345
Central America	36	998
Mexico	5,059	138,000
British Columbia	2	54
Totals	15,362	$415,519
In 1882	14,717	429,391

The total for the same time in 1881 was 17,832 flasks. In addition to the above shipments by water this year, it is known that 1440 flasks were shipped overland in the first four months of the year.

Massachusetts Industries.—The fourteenth annual report of the Massachusetts Labor Bureau contains the digest reports of 2240 manufacturing establishments out of 11,859 in the State; but those reported employ 207,793 persons out of 289,310. They represent also $162,000,000 in capital out of $304,000,000 for the State, besides 38 per cent. of all the wages paid, 57 per cent. of the stock used in raw material consumed, and 57 per cent. of the food product. The establishments reported are: 460 shoe factories, 270 metal works, 240 building establishments, 160 leather factories, 160 clothing factories, 150 cotton mills, 150 wool mills, 150 machine shops, 100 publishing houses, 90 carriage makers, and other kinds of factories less than 90 each. These factories paid wages ranging from 80 cents to $6 a day for skilled labor, and from 35 cents to $3 a day for common labor. Out of 2240 establishments, 567 paid $2 for skilled labor, 605 paid $2.50, 206 paid $3, 15 paid $4, and 317 did not report. Common labor had $1 a day in 471 factories, $1.25 in 391, $1.50 in 542, $1.75 in 118, $2 in 110, $3 in 1. Out of 2240 factories, 1960 had ten hours' labor a day, 186 had nine hours, 26 had eight hours, 27 had eleven hours, and 24 had twelve hours.

A New Steamship Company.—The certificate of incorporation of the New York and Baltimore Steamship Co. was recently filed in the office of the County Clerk. The objects of the company are to build, charter, navigate and own steam vessels to be used on all waters navigable by ocean steamers, and for the transportation of passengers, freight and mails, but more particularly to navigate a line of steamers between New York and Baltimore, Md. The capital stock of the company is $50,000, divided into 500 shares of $100 each. Ten per cent. of the capital stock has been paid in cash. The term of existence of the company is 20 years. The corporators are Horace K. Thurber, George H. Glover, Wesley A. Tucker, Frederick Haberman, William K. Hinman, Isaac H. Dixon, Edward Smith, John G. Kraft and Henry McShane.

When the "storage battery" was so far improved as to win indorsement from Sir William Thompson, it was thought that by its aid the electric lamp would be rapidly introduced into dwellings; but the storage batteries can hardly be said to answer satisfactorily the expectations formed of them. Some experts claim that they have demonstrated by experiment that the storage battery as now constructed is too costly for practical use. The late discovery of this fact is because the cost of the battery is greatly increased by the serious deterioration it undergoes. If it were permanent, as it was at first supposed to be, it is not too costly; but if it depreciates at the rate of at least 30 per cent per annum, as is alleged, it is not commercially useful, except for limited kinds of work. On the other hand, it may be said that there is still hope of finding means to make the storage battery permanent and cheap enough for practical use. Sir William Thompson, out of several hundred batteries, has found one or two that unaccountably last without depreciation, while the others fail. It is the "unaccountable" in the successful batteries that remains to be discovered and applied to all. If one will work, all can be made to work, though it may require considerable research to find the conditions essential to success.

Mr. Henry R. Worthington, with principal offices at 86 and 88 Liberty street, and 145 Broadway, New York City, has issued a circular stating that, in response to a general demand, and for the purpose of making a closer and more satisfactory connection with customers and the trade generally, a branch office and warehouse has been established at No. 95 Lake street, Chicago, Ill., where there will be carried at all times a full line of the regular sizes of Worthington steam pumps and water meters, and such special sizes as may be needed in emergency for important service, as well as a general supply of parts for repairs.

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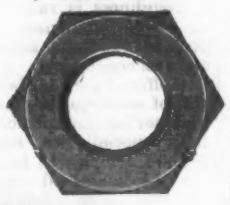

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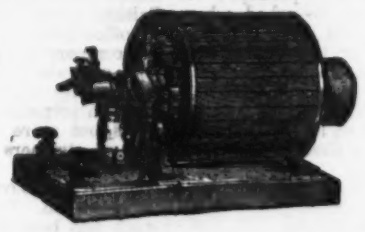

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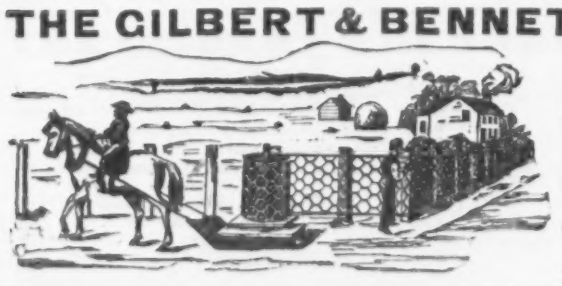

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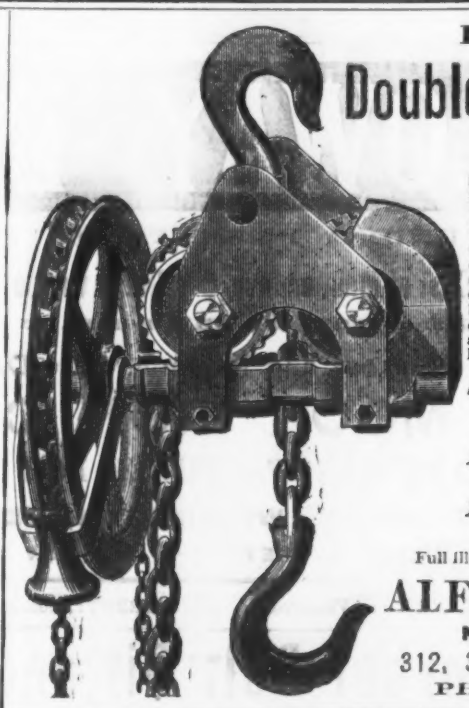

The unbounded reputation these Hoists have gained for themselves the last four years has no equal. There are now over 7000 in use. Large manufacturers have duplicated their orders a dozen times over. They are in use by all city departments, railroad companies, the United States Government, the English Government, the French Government, the Chinese Government, and in Russia, Germany, Chili, Brazil, Venezuela and Cuba. They have been awarded three silver medals and five diplomas. One trial will convince you they are the best in every particular. Sizes, 500 lbs. to 40,000.

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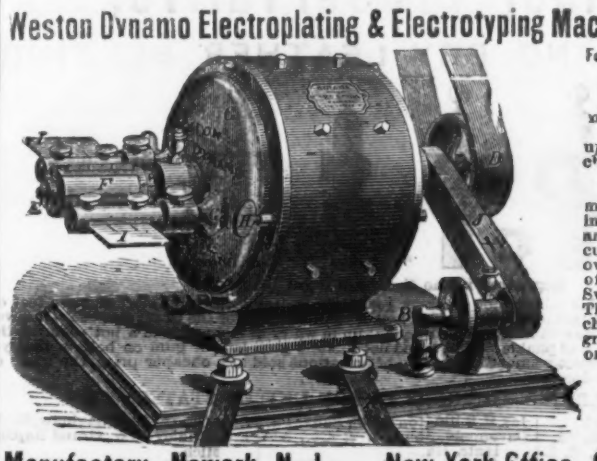

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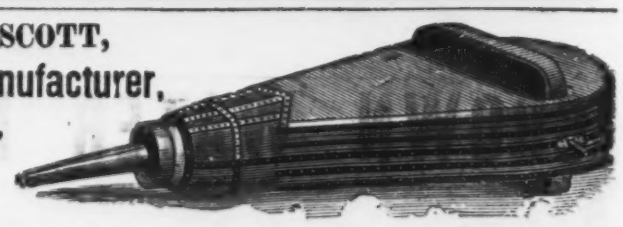

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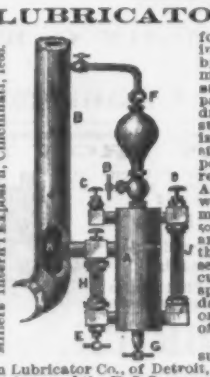

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Note.—In our recent suit against the American Lubricator Co., of Detroit, before Justice Stanley Matthews, of the U. S. Supreme Court, involving their "sight feed" feature, a decree was rendered in our favor August 20, 1881. Address,

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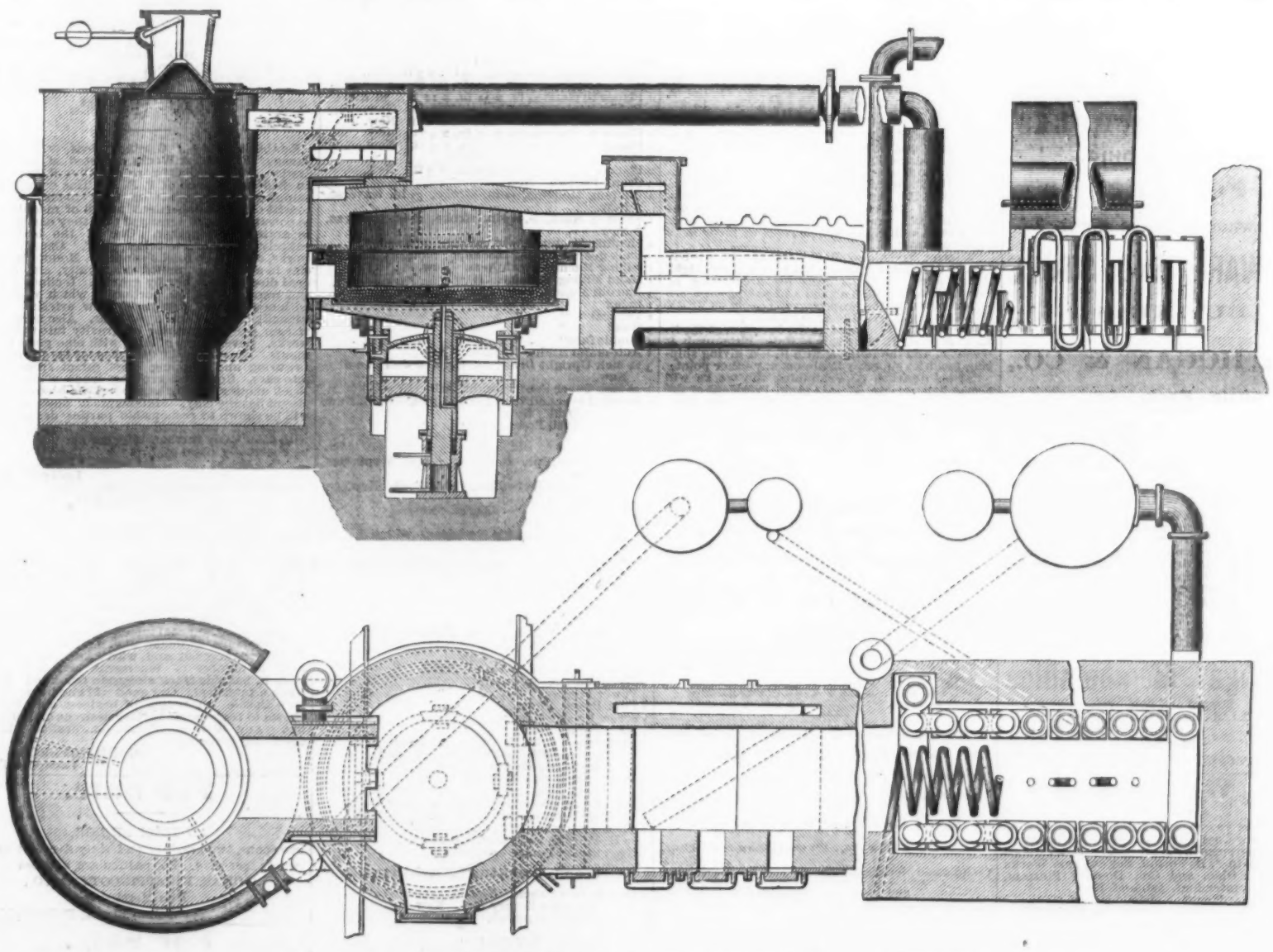
Mention *The Iron Age.*

The Henderson Gas Furnace.

In a recent issue we gave results of this furnace, which, in principle, was illustrated and described in the *Metallurgical Review* in 1878. As it has been improved in details since, and put in use at Bellefonte, Pa., we now present an illustrated description of the furnace as built. This combination of details gives complete utilization of the fuel, together with the rapid generation of the highest heats practically required. The principle is that the supply of air for the generation of the gas in the producer and the quantity needed for its combustion—partial or complete, as the requirements of the process may be—can be supplied with the needed accuracy only by separate engines.

In the plan of the drawing which we give this week, the air for converting the fuel in the producer into gas is furnished by a vertical fly-wheel engine. In order to make the flow of air more regular, it is delivered into a receiver, from which it is carried to the blast-pipe, being distributed into the producer by the tuyeres at the bottom. The coal is charged into the safety hopper, and falls into the upper part of the producer provided with a boiler-iron skirt, which serves as a retort in which the bituminous substances of the coal are partly distilled off and forced to pass downward into the current of gas. The air is to produce a gas containing one-third by volume of hydrogen, and two-thirds by volume of carbonic oxide, steam being introduced whenever it is necessary to effect that end. The ash and clinker of the coal are removed by fluxing it and tapping the cinder through the opening in the bottom of the hearth, the fluxes being so chosen that the cinder carries three parts of silica to two parts of lime and one part of alumina. To effect this, varying quantities of lime are generally added. We are informed that this plan works very well at the plant put up at Bellefonte. The producer is placed in close proximity to the furnace, thus avoiding any loss of heat by radiation in long flues. Flowing through the outlet flue at the top of the producer, the gas passes downward at its end, and mixes thoroughly with the preheated air, which is discharged through the pipe leading from the air-heating apparatus underneath the boiler to a number of small holes in the vertical flues in a direction at right angles to the current of gas. Thus thoroughly mixed, the burning gases enter the reverberatory chamber, impinging upon the metal in the hearth. The air for the combustion of the gas is furnished in the exact quantity needed by the other blowing engine nearest the boiler. It passes through a regulating receiver and horizontal pipe into cast-iron syphon hot-blast pipes placed under the boiler, where the waste heat of the gases of combustion is utilized. The melter has it in his power to obtain a neutral, oxidizing or reducing flame by regulating the quantity of air to be mixed with the gas. In the case of the two former methods of working, the gases of combustion leave the first reverberatory chamber through its outlet flue, and this heat is first utilized to preheat materials to be melted on the hearth of the next chamber. The heat of the waste gases is further reduced by heating the air in the cast-iron heating pipes and making steam in the boiler above them. In case a reducing flame is required in the first reverberatory chamber, the combustion of the gas has only been partial. In order to fully utilize it the excess of air for combustion is diverted to the pipe shown under the hearth of the preheating chamber, carrying it upward in the flues along the free side wall of the hearth to be further heated, and make it flow through the slanting holes in the roof at the end of the flue leading from first to second reverberatory chambers, into the current of unconsumed gases coming from the first reverberatory chamber. The hearth is mounted on a rotary platform, which can be raised into position by hydraulic power. A sand-box is used for sealing the joint. The hearth makes from three to four revolutions per minute. By lowering the platform, four wheels, with which it is provided, rest on a track over which it can be drawn out sideways.

The furnace here illustrated has a hearth capacity of 2½ tons open-hearth steel. It is capable, however, of being enlarged to the dimensions given to modern open-hearth furnaces. The consumption of fuel is about three cwt. per hour. Ingot iron, from one-half pig metal and one-half wrought scrap iron, takes from 4 to 4½ hours from time of charging cold materials to pouring the metal from the hearth. The furnace and details have been patented.



VERTICAL AND CROSS SECTIONS OF THE HENDERSON GAS FURNACE.

The Precious Metals.

Mint Director Burchard's report upon the production of gold and silver during the calendar year 1882 has some interesting features. Not the least of these is the evidence which it affords of the increasing importance of agriculture as compared with mining in California. It was once supposed that California could not produce enough food for her mining population. But 20 years have changed all that. The Pacific coast is now a regular and heavy exporter of food products. So, too, there was a time when farmers had no rights which miners were bound to respect. The detritus of hydraulic mines was allowed to fill up streams and sweep over meadows, with none to molest or make afraid those who permitted the stuff to destroy crops and ruin homesteads. But this state of affairs has also been, in a measure, changed by the lapse of time and several "anti-slickens" wars. The farmers are asserting themselves; the Legislature has taken a hand; even Congress, in the notorious River and Harbor bill of 1882, undertook to help the miners out of the ditch into which they had fallen, through a grant of money for deepening the Sacramento and other rivers.

Litigation between the agricultural and mining interests has been in progress for two or three years. One result of it has been a considerable falling off in the State's yield of gold. In 1881, according to Mr. Burchard's report rendered a year ago, the California mines produced $18,200,000 in gold; the new report shows that the output last year was only $16,800,000. Here is a loss of $1,400,000, accountable for on no other ground than this—that the farmers have got the upper hand, at least to the extent of suppressing the most damaging hydraulic mining, pending determination in the courts of the respective rights of the two industries. There is gold enough in California still. Mines will be actively worked for many years to come. But their owners must see to it that they do not recklessly trample on the rights of farmers in the valleys. This issue is at this moment about to be settled finally.

The yield of silver in Colorado is almost exactly equal to that of gold in California—$16,500,000 of the former last year to $16,800,000 of the latter. But adding the silver to the gold in each case, Colorado takes the lead, with an output of the precious metals in 1882 amounting to $19,860,000, as against California's yield of $17,645,000. Nevertheless, even Colorado shows a decline—and that, too, in its chief industry, silver. In 1881 the silver output of the Centennial State amounted to $17,160,000, or $600,000 more than last year. The yield of the Leadville mines began to diminish before 1881. And yet Colorado, with characteristic assurance, lays claim to a larger production in 1882 than in 1881—as if lead and dross were pure gold or fine silver. Mr. Burchard remarks that "Nevada has suffered probably more than any other mining section from stock speculation and mismanagement in mining." In these respects Colorado is a good second.

The returns from New Mexico, Montana and Arizona are significant of the rapid development of those Territories. Arizona ranks below only Colorado, California and Nevada in its total output, which, however, amounting to $8,565,000 last year, but little exceeded the output of 1881. But New Mexico jumped from a silver product of $275,000 in 1881 to $1,800,000 in 1882. Montana, in like manner, shows an increase of nearly $2,000,000 in the yield of its silver mines. The gold product of the entire country, which was estimated at $36,000,000 in 1880, dropped to $34,700,000 in 1881, and to $32,500,000 last year.

Convict Labor.

Mr. Arad Barrows, in a letter to the Philadelphia *North American*, discussing the recent bills passed by the Legislature of Pennsylvania with relation to prison-labor contracts, presents the views of those opposed to the contract system, as follows:

One of our Senators at Harrisburg estimated the number of convicts in the United States at 20,000. About one-eighth of this number are employed in the States of New York, Ohio and Maryland in the manufacture of cast-iron stoves and hollow-ware and like castings. They supply their home market, and the surplus is sent into adjoining States, our own State included, underselling the regular trade to such an extent as to make the business unremunerative, and depreciating in value the millions of property invested in this branch of industry. The manufacturers of stoves and hollow-ware in this State are taxed by this process to support the convicts of New York, Ohio and Maryland, and to enrich a few men who are so fortunate as to be prison contractors. They get the labor of these convicts for about 60 cents per day, while those employing outside labor in this industry pay for the same work from $2 to $4 per day. The prison people send their stoves to Pittsburgh, pay the freight, and can sell them in that cheap iron market at from $1 to $1.50 per stove less than they can be manufactured for there. The trade have not as yet much fault to find with the contract system in this State, for no large bodies of men are brought in competition with any one industry; but extensive iron works are now being built at our Western Penitentiary to enable a favored few to still further depress this business and to depreciate their property. To forestall the operations of these laws just passed, rumor says a contract has been made with a Chicago iron foundry company to run from four to ten years. Our prison authorities will have hard work to make the people believe they are not pecuniarily interested in a contract like this. Is there any justice to our citizens in this? Is there any justice to the prisoner? We put men in prison for embezzling, and then the State embezzles or confiscates his wages (if you like that word better) for the benefit of some pet individual or company. There are several branches of business in the same position, but we take this as an illustration. Do not for a moment suppose the advocates of these bills wished to keep the convicts in idleness. We expect them to work, and their labor should be worth to the State and to themselves nearly as much as outside labor in the same line, instead of letting it out to the favored few for their board and clothing only, and find this favored few shops clear of rent and taxes in order to still further depress our business, to the injury of ourselves and workmen.

We will now say a few words in favor of the system these bills propose. Many chains are manufactured by prisoners at the Western Penitentiary. Instead of continuing the contract system (that is, letting this labor at one-fifth its value to that favored few), allow chainmakers or merchants requiring chains to send their iron and coal to the prison and agree with the prison authorities to manufacture the article by the foot or yard, the State receiving the pay, retaining the expense of keeping the prisoners and holding the balance for the prisoners' use. In this way all in any line of business suited for prison facilities can have an equal chance in the employment of this labor, both State and county. We have heard of shovels, hoes, forks, chairs (or parts of them), stockings (the prisoner owning the machine), bags, brooms, brushes, boots, shoes, cigars and a great number of other articles, for which the manufacturer or merchant can send his materials to these people and pay them a fair price to put it in the shape required; and if our House of Correction build a turnpike on this principle, all you have to do is to mark it "convict made" and it answers the law, and by this process justice is done the State, justice is done the prisoner, justice is done to our citizens, and the State is not placed in the unnatural position of being engaged in competition with or in depressing the business of any of her citizens out of prison, while she is preparing those in prison for good citizenship, and, if they are industrious, a capital to start with when their term of service expires.

SCIENTIFIC AND TECHNICAL.

The Fleuss Apparatus.

Fleuss's noxious gas apparatus for breathing in irrespirable gases, as recently described before one of the scientific societies of Great Britain, is self-contained, wholly independent of the surrounding atmosphere, and will supply air for breathing for four hours at a time. The principle of the apparatus is that the wearer breathes the same air over and over again, the carbonic acid being taken from it at each respiration, and the requisite amount of oxygen restored. The apparatus, which is carried upon the back of the explorer, in the form of a knapsack, consists of a strong sheet-copper cylinder 12 x 6½ inches with domed ends, and capable of holding 4 cubic feet of oxygen gas at a pressure of 16 atmospheres. Above the cylinder is a square metal box 12 inches by 12 inches by 4 inches to contain the filter, which is a box of vulcanite, divided into four compartments by vertical diaphragms, and with a wooden lid made air-tight by an india-rubber washer, and having an inlet and outlet pipe with valves attached. This box is filled with hempen tow and stick caustic soda, and the exhaled breath passes twice up and down through the tow and soda, and is thoroughly freed of carbonic acid, the excess of moisture collecting under a perforated false bottom arranged for the purpose. A flat bag of vulcanized india-rubber, 15 x 12 inches, is fastened in front of the wearer, and is connected by an india-rubber pipe passing over the shoulders to the outlet pipe of the filter. The bag is also in communication with the oxygen chamber, and the supply of oxygen can be regulated by a jamb-screw valve under the control of the wearer. An india-rubber mask is made to fit air-tight to the face, and is held in place by straps buckled up at the back of the head; the mask is fitted with a pair of flexible pipes, the one for exhaling being in communication with the inlet pipe of the filter, and the other, for inhaling, being in communication with the air bag. The exhaled breath having passed through the filter, enters the bag in a purified state, and there, meeting with its complement of oxygen, is fit to be again inhaled. The bag being perfectly flexible, readily expands or contracts as the breath passes in or out of it, so that no effort is required in respiration.

Finishing Files by Sand Blast.

It may be of interest to state that the chief value of the well-known sand-blast method of sharpening files does not consist so much in its application to the sharpening of old files, but in finishing new files that have just been cut. Experiments have shown that such files, submitted to the action of a sand blast, exhibit greater resistance to wear and greater cutting power than files as ordinarily made. In order, however, to obtain definite figures as to their superiority, a series of experiments were made some time ago, yielding the following results: A new bastard file some 14 inches long was finished on one side according to the sand-blast method, while the other side remained in its ordinary state. Still another file of the same dimensions, and which had been in use for some time, was sharpened by a sand blast, and three pieces of gun metal of exactly the same size and the same composition were then operated upon, until finally one of the three cutting surfaces of the two files were found useless for further work. They were then used on cast iron, wrought iron and steel, and in each case it was found that the ordinary file gave out long before the others. The following table gives the number of strokes for each file, the weights of the filings, and the relations of the cutting power for each case. It should be mentioned, however, that the letter *a* represents the new file finished by the sand blast, *b* the ordinary new file, and *c* the old file which was resharpened:

Material.	No. of strokes	Weight of filings in pounds.			Relations of cut'ng powers		
		a	*b*	*c*	*a*	*b*	*c*
Gun metal.	28,000	6.556	3.562	5.258	1.84	1	1.47
Cast iron..	8,000	1.197	0.986	1.173	1.21	1	1.19
Wrt. iron..	4,400	0.363	0.353	0.343	1.08	1	0.975
Steel.....	10,000	0.757	0.640	0.673	1.18	1	1.05

The ordinary file was completely worn out during the trials, while those which had been subjected to the sand blast were still in condition for further use. It may also be remarked that Mr. Friedr. Krupp, of Essen, Germany, has introduced the method in his works.

The Composition of Wood.

The fact that all woods contain a certain proportion of moisture, greater or less, according to the time which has elapsed since cutting, is generally known, but it is not always that sufficient attention is given to this point. In the direct application of wood as fuel, or for building purposes, the matter is of great practical importance, so much so that the annexed figures will be perused with interest. Freshly-cut green wood may be said to contain on an average about 45 per cent. of moisture, and even after long exposure to the atmosphere, under favorable conditions, it still retains from 18 to 20 per cent. The table given below, and prepared by M. Violette, shows the proportion of water expelled from different woods at gradually increasing temperatures:

Temperature Degrees Fahrenheit.	Water expelled from one hundred parts of wood.			
	Oak.	Ash.	Elm.	Walnut.
257.....	15.26	14.78	15.38	15.55
302.....	17.93	16.29	17.09	17.43
347.....	32.13	21.22	36.94?	22.00
392.....	35.80	27.51	33.38	41.77?
437.....	44.32	38.38	40.56	36.56

The wood which M. Violette operated upon had been kept in store for two years. In each experiment the specimens were exposed for two hours to dessication in a current of superheated steam, the temperature of which was gradually raised from 257° to 437° F. When wood which has been strongly dried by means of artificial heat is left exposed to the atmosphere, it reabsorbs about as much water as it contains in its air-dried state. In this connection, the following figures, showing the compositions of different specimens, may prove interesting, the analyses having been made by M. E. Chevandier:

Woods.	Composition.				
	Carbon	Hydrogen.	Oxygen.	Nitrogen.	Ash
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Beech...	49.36	6.01	42.69	0.91	1.00
Oak....	49.64	5.92	41.16	1.29	1.97
Birch....	50.20	6.20	41.62	1.15	0.81
Poplar...	49.37	6.21	41.60	0.96	1.86
Willow..	49.96	5.96	39.56	0.96	3.37
Average.	49.70	6.06	41.30	1.05	1.80

The Chicago Railway Exposition.—A dispatch from Chicago, dated June 23, says: The National Exposition of Railway Appliances, which has been in progress here for one month, closed to-night. The attendance during the present week was very large, and it was desired to keep the exposition open two weeks longer, but, the building having been leased for other purposes, this was prevented. The display has been altogether the greatest yet attempted, and the management has been accorded great praise. Coming to an end at this time the management will sustain a financial loss, which, with the same patronage two weeks longer, would have been avoided. The magnitude of the exhibits necessitated more or less confusion for the first two weeks, and to this is ascribed its partial failure from a financial standpoint.

It is announced that Mr. Robert Hunt, who for many years past has been Keeper of the Mining Records of Great Britain, has retired from that office. The office referred to has charge of the collection of the statistics of mining in Great Britain, and, through the efficient administration of its duties by the late keeper, has been made very important to the coal and iron trades.

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1 " 23 in. " 16 ft. " "
1 each Engine Lathes, 22 in. swing, 6 ft., 8 ft., 10 ft., 12 ft. bed. New.
1 each Engine Lathes, 20 in. swing, 6 ft., 8 ft., 10 ft., 12 ft. bed. New.
2 Engine Lathes, 20 in. swing, 8 ft. bed. 2d hand.
1 each Engine Lathes, 19 in. swing, 7 ft, 8 ft., 10 ft. bed. New.
4 Engine Lathes, 19 in. swing, 6 ft. bed. Nearly new
1 " 19 " " 7 " " 2d hand.
1 " 18 " " 7 " " 2d hand.
1 " 18 " " 6 " " "
1 " 18 " " 6 " " New.
1 each Engine Lathes, 17 in. swing, 6 ft., 7 ft., 8 ft., 10 ft. bed. New.
1 Engine Lathe, 17 in. swing, 6 ft. bed. 2d hand.
1 " 16 " " 6 " " "
1 " 15 " " 9 " " "
1 " 15 " " 6 " " "
2 " 15 " " 6 " " New.
1 " 14 " " 6 " " 2d hand.
1 " 13 " " 6 " " New.
3 " 13 " " 5 " " "
1 " 12 " " 5 " " "
1 " 11 " " 5 " " 2d hand.
1 " 11 " " 5 " " New.
1 " 10 " " 4 " " "
2 Hand Lathes, 15 in. x 5 ft. bed. New.
2 " 12 in. x 4 ft. bed. 2d hand.
1 " 12 in. x 4½ ft. bed. New.
1 " 12 in. x 4 ft. bed. New.
1 " 11½ in. x 4 ft. bed. New.
1 " 10 in. x 3 ft. New.
6 " 3 ft. x 4 ft. bed, 10½ in. swing. 2d hand.
5 Single Head Lathes, 13 in. swing, 4 ft. bed. 2d hand.
1 Bench Lathe, 8½ in. x 3 ft. bed. New.
1 Foot Lathe, 8½ in. x 3 ft. bed. New.
1 Foot Lathe, 12 in. x 4 ft. bed. New.
1 Foot Lathe, 8 in. x 3 ft., 8 in bed. New.
1 Turret Lathe. 2d hand. 16 in. x 5 ft. bed.
1 Planer to plane 31 in. x 30 in. x 6 ft. 2d hand.
1 Planer to plane 34 in. x 32 in. x 12 ft. 2d hand.
1 Planer to plane 27 in. x 27 in. x 7 ft. New.
1 Planer to plane 24 in. x 24 in. x 8 ft. New.
1 Planer to plane 22 in. x 22 in. x 4 ft. New.
1 Planer to plane 20 in. x 20 in. x 4 ft. New.
1 Planer 20 in. x 4½ ft. 2d hand.
2 Planers to plane 16 in. x 16 in. x 3 ft. New.
3 Crank Planers. New.
1 Shaping Machine, 12-in. stroke, 33-in. traverse. New.
1 Shaping Machine, 12-in. stroke, 18-in. traverse. New.
2 Shaping Machines, 7-in. stroke. 2d hand.
1 Back-geared Milling Machine. New.
1 Milling Machine, with Arm. New.
1 Hand Milling Machine. New.
5 Lincoln Millers, worm feed. 2d hand.
1 Index " 2d hand.
1 Vertical " "
3 Hand " "
1 Double face " "
1 Automatic Milling Machine. New.
3 24-inch Upright Drills, Bk. Gr. and Self Fee d. New.
1 20-inch Lever Feed Upright Drill. New.
1 20-inch Lever and Wheel Feed Upright Drill. New.
1 Sensitive Drill. New.
1 4-Spindle Drill Press. New.
1 3 " " " "
1 2 " " " "
7 Gang or Multiple Drills, 2, 3 and 6 spindles, 2d hand.
1 Single Spindle Light Drill, Table Feed. New.
1 Single Spindle Profiler. New.
1 Two " " Light. New.
2 Profilers. 2d hand.
2 Turret Head Chucking Machines. 2d hand.
1 Broaching Machine. 2d hand.
1 Cutting Off Machine, 2½ in. 2d hand.
1 No. 1 Screw Machine, wire feed. 2d hand.
1 Screw Machine. New.
1 " Slotter. "
1 Cutter Grinder. "
6 Emery Grinders. New.
1 Slitting or Circular Shear. New.
2 Tapping Machines.
1 13 ft. Bending Rolls. 2d hand.
1 40 in. Car Wheel Borer. 2d hand.
3 Hand Shears. 2d hand.
3 Power Presses. New.
1 Foot Press. New.
1 Screw Press. New.
1 Drop Press. New.
1 Drop Press, 50 lb. Hammer. 2d hand.
1 Lot Heavy Polishing Frames. 2d hand.
2 Shafting Straighteners. New.
1 10 x 12 Stationary Engine. New.
1 9¾ x 12 in. Stationary Engine. New.
1 5 in. x 6 in. Stationary Engine. New.
1 10 H. P. Upright Boiler. New.
1 5 x 12 Stationary Engine. 2d hand.
1 10 H. P. Cylinder Boiler. 2d hand.
1 No. 1 Steam Pump. 2d hand.

Wood-Working Machinery.

1 Double Saw Bench. New.
1 24-in. Surfacer Rotary Bed. New.
1 Band Sawing Machine. New.
1 Scroll " "
1 Rod Machine. Self Feed. "
1 Sandpapering Machine. 2d hand.
1 8-in. Molder, 4 sides. 2d hand.
1 Edge Molding Machine. 2d hand.
1 Daniels Planer. 2d hand.
1 Lar. e Lot 2d-hand Pulleys and Hangers.

And lot of others, both new and 2d hand.

If the list does not contain what you want, write us.

J. M. BADGER & CO.,
49 DEY STREET, New York City.

For Sale.

The half interest in a Wholesale and Retail Hardware business in the City of Jacksonville, Florida. Sales last year, $250,000. Inquire of Holbrook Bros., 87 Beekman St., New York City; Perry & Co., Albany, N. Y.; McConnell & Co., Hornellsville, N. Y.; Benedict & McConihe, Jacksonville, Florida.

VALUABLE PROPERTY FOR SALE.

The Hardware Works, Tenth and Spruce Streets, Reading, Pa., consisting of Foundry, Machine Shops, Warehouse, and other buildings, machinery, etc., all in first class running order. One entire block of ground. Ample room for extension. Will be sold on easy terms. Apply to

F. C. SMINK,
Reading, Pa.

For Sale.

One-third or one-half interest in a large Foundry and Machine Works now doing a large and paying business. Located in one of the largest and most rapidly growing towns in the South. Indispensable that the party should be a No. 1 office man and financier.

Address "FOUNDRY 44,"
Office of *The Iron Age*, 83 Reade street, New York.

WANTED.—A permanent position as Manager, Superintendent or Designer and Draftsman by an energetic man who knows his business and scientifically educated, with long, practical experience in originating all kinds of new machinery, both light and heavy, and boilers, estimating their cost and price, and superintending their construction, and the management of help.

Address "F,"
80 East Eighth St., Oswego, N. Y.

A GENTLEMAN having a good business with the Hardware Trade of Boston and New England, and wishing to add to his business, would like a specialty to handle on commission.

Address "SPECIALTY,"
Office of *The Iron Age*, 83 Reade st., New York.

Special Notices.

New & Second-Hand Machinery.

FEB. 21, 1883.

1 Engine Lathe, 14 in. x 5, 6, 7 and 8 ft Grant & Bogert.
1 " " 26 in. x 12 ft., Grant & Bogert. New.
1 " " 45 in. x 15 ft. Good order.
1 " " 36 in. x 12, 17 ft. New.
1 " " 42 in. x 14 ft. New.
1 " " 14 in. x 6 ft. Star Tool Co. New.
1 " " 16 in. x 6 ft. New.
1 " " 14 in. x 5 x 6 ft. New.
1 " " 16 in. x 7 ft. Bridgeport. New.
1 " " 13 in. x 5 ft. and 6 ft. Ames. New.
1 " " 16 in. x 6, 7 and 8 ft. Ames. New.
1 " " 18 in. x 8 and 10 ft. Lodge & Barker. New
1 " " 27 in. x 10 in. Lodge & Barker.
1 " " 22 in. x 12 ft. New.
1 " " 20 in. x 10 ft. New.
1 " " 28 in. x 16 ft. New.
1 " " 24 in. x 12, 14 and 16 ft. New.
1 " " 11 in. x 4 ft. and 5 ft. Prentiss. New
1 " " 12 in. x 5 ft. Young. New.
1 Plain Engine Lathe, 16 in. x 4 ft. New.
1 " " 14 in. x 4 ft. New.
1 Fox Lathe, 15 in. x 5 ft., Am. Tool & Machine Co.
1 15 in. x 4 ft. Turret Lathe. Lodge & Barker.
1 Fox Turret Lathe, 16 in. x 6 ft. Lodge & Barker. New
1 Planer, 50 in. x 50 in. x 17 ft. Good order.
1 " 32 in. x 32 in. x 7 ft. Good order.
1 " 16 in. x 16 in., x 3 ft. New.
1 " 22 in. x 20 in. x 5 ft. New.
1 " 24 in. x 24 in. x 6 ft. Hendey. New
1 " 26 in. x 26 in. x 7 ft. New.
1 " 16 in. Lever Table Drill. New.
1 Crank Planer, 16 in. x 16 in. x 13 in. New.
1 16-in. Upright Drill. New.
1 20-in. " Prentiss. New.
1 24-in. " Prentiss. New.
1 30 in. " Prentiss. New.
1 25-in. swing B. G. & S. F. Drill. Blaisdell. New
1 28-in. " " " " "
1 38-in. swing, B. G. & T. F. Drill. New.
1 16-in. Shaper. Gould & Eberhardt. New.
1 10-in. Shaper. Gould & Eberhardt. New.
1 15-in. Shaper. Hendey. New.
1 24 in. Shaper. Hendey. New.
1 24-in. Shaper. Hendey. Good order.
1 9-in. Shaper. Hewes & Phillips. New.
1 9-in. Shaper. New.
1 14-in. Shaper.
Full Assortment of Milling Machines, Spindle Drills, &c., of Garvin's. New. J. & Lamson.
1 each Nos. 2 and 4 Screw Machines, Wire Feed. Jones
2 No. 2 Lincoln Millers. Good order.
2 No. 2 Lincoln Millers. New.
1 Hand Lathe, 12 x 4, 5 and 6 ft. New.
1 Hand Lathe, 16 in. x 6 and 7 ft. New.
1 Boring and Turning Mill, 50 in. New.
1 Boring and Turning Mill, 72 in., 2 Heads. New.
1 each 3 and 7 spindle Nut Tappers. New.
1 Gig Saw. Good as new. Rogers.
1 700-lb. Steam Hammer. Ferris & Miles. Good order

New York Agency of
THE TANITE CO. and GRANT & BOGERT MACHINE TOOL WORKS,
H. PRENTISS & CO., 42 Dey St., N.Y.

For Sale.

Established 2873. Gardner Bros. "Standard Savage" Fire Brick Works, situated at Eilersite Station, Md., on Baltimore and Ohio R. R. Also on Bedford Branch of P. R. R. Has convenient shipping arrangements on both roads. Works consist of two independent plants of machinery, so constructed and arranged that they can be run separately or together. One of the buildings entirely new, erected last year. Capacity of works, over 14,000 bricks per day. Mount Savage clay in abundance, mined on royalty, and delivered direct into works by gravity. Inclined plane and tram road, large portion of which was laid with new Tee rail last year. New artesian well, capacity over 35 barrels per hour. Also mountain stream, delivering water by gravity into tanks at works. Seven acres of land, with nine good tenements. Everything in first-class order for manufacturing and shipping brick direct from kilns into cars. Good and growing trade established. Brick unquestionably as good as the best made of Mount Savage clay. Statements of business done will be shown to responsible parties desirous of purchasing. Our good will and influence to go with sale. Any further information desired will be cheerfully given by

GARDNER BROS.,
Lockport, Pa.

For Sale.

Established in 1864. Gardner Bros.' Gas Retort and Fire Brick Works, situated at Lockport Station, on P. R. R., 60 miles from Pittsburgh, Pa. The works consist of complete plant for manufacturing Clay Gas Retorts, Settings, Blocks, Tile and Fire Brick. Capacity, about 100 retorts, with necessary settings, and 100,000 fire brick per month. Clay and coal mined by ourselves within short distance of works and hauled in wagons. Over three acres of land, with all necessary buildings, a number of tenements and town lots. P. R. R. has side track alongside our kilns. Good trade established. Our good will and influence to go with sale. Statement of business done will be shown to responsible parties desirous of purchasing. Any further information desired will be cheerfully given by

GARDNER BROS.,
Lockport, Pa.

For Sale.

AN IRON BRIDGE,

two spans, two hundred and sixty-five feet each, twenty feet wide. For particulars, address

CHAS. K. LIPPINCOTT & CO.,
Iron Merchants,
330 Walnut Street, Philadelphia.

For Sale.

The Industrial Works of Shamokin, owned and successfully carried on for a number of years by the late Wm. Brown, deceased, consisting of Foundry and Machine Shop, and a large stock of Patterns regarded as part of the property. Boiler Shop, Blacksmith Shop and Factory for the manufacture of heavy coal screens. Well located in the borough of Shamokin, Pa., with the best facilities for shipping by rail, and surrounded by a district contributing all the work that a shop of that kind can possibly turn out. Easy terms of payment are offered to suit a purchaser of limited capital. For list of Tools and further particulars apply to

WM. McILVAIN & SONS,
Manufacturers of Boiler Plate and Tank Iron,
Reading, Pa.

For Sale.

Heavy Planer, 30 in. x 30 in. x 13 ft., with rack extension, to plane 20 ft. Good as new.
24 in. to 36 in. planers.
15 in. column drills.
1½ in. to 36 in. lathes.
Lever Shears to cut 2 x 2.
Lever Shears to trim ½ plate.

A. G. BROOKS & WINEBRENER,
261 N. 3d St., Philadelphia.

FOR SALE.

No. 6 Baker Blower, Nos. 4 and 6 Sturtevant Blower, No. 6 McKinzie Blower; Cupola, 48 inches; Crane, 15 tons; 2, 4, 6 and 10 H.-P. Baxter Engines; Planer, 20 x 16 x 4 ft., $250; do., old style, 29 x 29 x 5, $200; Engine Lathe, 30 in. x 14 ft., $350, &c.

Purchases of new and second-hand machinery carefully made, at low rates, for parties out of the city.

C. R. BIGELOW, M. E.,
18 New Church St., New York City.

For Sale.

Stock of General Hardware, Stoves and Tinware, and good-will of the business without bonus. Stock will inventory thirteen to fifteen thousand. Business located in a growing town of about 9000 inhabitants, in Northwestern Pennsylvania, and a railroad center. For further information, address

"G. T."
Office of *The Iron Age*, 83 Reade St., New York.

For Sale.

A Stock of Hardware in a good location and a good trade in Omaha, Neb. The best opening in the West for Retail Hardware Business. Stock worth about $60000. Will invoice stock and give time for goods. Reason for selling, health wont permit.

Address "HARDWARE,"
Office of *The Iron Age*, 77 4th av., Pittsburgh, Pa.

Trade Report.

BRITISH IRON AND METAL MARKETS.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, June 27, 1883.

Scotch Pig.—The market is weaker, with prices still declining. Makers' prices are quoted as follows:

Coltness,	alongside,	Glasgow	59/6
Langloan,	"	"	59/6
Gartsherrie,	"	"	57/
Summerlee,	"	"	57/
Carnbroe,	"	"	54/6
Glengarnock,	"	Ardrossan	54/6
Eglinton,	"	"	48/6
Dalmellington,	"	"	48/6
Shotts,	"	at Leith	59/6

Lighterage from Ardrossan to Glasgow is 1/ ⅌ ton.

Cleveland Pig.—The market is quiet and unchanged. We quote as follows, f.o.b. shipping ports:

Middlesboro'	No. 1 Foundry	43/6
"	No. 2 "	42/6
"	No. 3 "	39/ @ 40/
"	No. 4 Forge	38/6.

Bessemer Pig—Is a little weaker. No change in quotations. We quote: W. C. Hematites 50/ @ 51/ for mixed lots Nos. 1, 2 and 3, equal parts, f.o.b. shipping ports.

Blooms.—Nothing doing.

Manufactured Iron.—The market is quiet. We quote at works, nominally:

		£	s.	d.		£	s.	d.
Staff.	Ord. Marked Bars	7	10	0	@			
"	Medium "	6	10	0	@	7	0	0
"	Common "	6	0	0	@	6	10	0
Hoops,	20 W. G. and over.							
"	Common Best	7	5	0	@	7	15	0
"	Medium	6	10	0	@	6	15	0
"	Common	6	5	0	@	6	10	0
Sheets,	20 W. G. and under.							
"	Ordinary Best	9	10	0	@	10	10	0
"	Common	7	10	0	@	8	0	0
Welsh Bars		5	10	0	@	5	12	6

Steel Rails.—The market is quiet and unchanged. Ordinary Sections are quoted £4. 15/ @ £5, f.o.b. shipping ports.

Iron Rails—Dull and nominal. Welsh, 30 lb and upward, are quoted, nominally, £4. 15/ £5. 10/, f.o.b. shipping ports.

Old Rails.—The market is quiet. We quote Old D. H.'s, c.i.f. New York, £3. 12/6 @ £3. 15/.

Scrap.—The market is quiet and unchanged. We quote Heavy Wrought £3. 2/6 @ £3. 5/, c.i.f. New York. Bessemer Crop Ends are quoted 60/ @ 62/, f.o.b. shipping ports, for run of the mill.

Copper.—The market is a little firmer. Best Selected is quoted £69 @ £70, and Chili Bars, £64 @ £64. 10/.

Tin—Is a little stronger. We quote Straits Ingot, spot, £94 @ £94. 10/, and futures, £95 @ £95. 10/.

Tin Plates.—The market is steady. We quote:

Tin Plates, 10 x 14,	1st qual.	Charcoal	19/6	@ 20/6
" "	2d "	"	18/6	@ 19/
" "	1st "	Coke	17/6	@ 18/
" "	2d "	"	16/	@ 16/6

Spelter—Is unchanged. Ordinary is quoted £15 @ £15. 2/6 at shipping ports.

Lead—Is a little lower. We quote Common English Pig £12. 17/6 @ £13. 2/6.

Freights.—Steam from Glasgow to New York, 7/; Liverpool to New York, 6/ @ 8/; Liverpool to Philadelphia, 7/6 @ 8/, and London to New York, 7/6 @ 9/6.

BUSINESS AND FINANCE.

Office of THE IRON AGE,
WEDNESDAY EVENING, June 27, 1883.

In a review of the week the most notable feature is the reduction of values in several of our chief exportable commodities, brought about by the Chicago failures. From the beginning of the break this result was anticipated, and from it were derived hopes that our foreign trade would get into a better shape. The rates of sterling exchange have responded in accordance with this view, but the exports of grain, breadstuffs and domestic produce as yet are only moderate. The markets for leading staples remain unsettled, pending the course of events, with a bearish tendency, and the volume of speculative business is of meager proportions. The weakness in grain observable at the West is partly due to reports respecting the fine harvest of wheat which has commenced in Illinois, Kansas, Missouri and California. The visible supplies are also increasing, causing anxiety to sell. The renewed export demand for provisions is hardly maintained. In ocean freights the chartering movement is checked by the reduced offering of desirable carriers and the hardening tendency of rates. Cotton continues dull and weak, with an increased visible supply equal to 335,000 bales, compared with the corresponding date last year, and the present increased acreage for the whole South is estimated at 5.18 per cent. The prevailing prices for cotton goods were made on a basis of 10¢ @ 10¼¢.

General trade is moderate in volume, but is daily getting into a stronger position. At the same time, more than usual caution will be exercised among the mercantile classes and banking institutions alike, until the full significance of the recent disturbance at Chicago is ascertained; all suspicious connections involving credit will be the subject of inquiry. So far as indicated by the bank exchanges, the distribution of merchandise is seasonably fair, the aggregate clearings in 26 principal cities the past week having been $1,000,000,000, against $992,148,477 in the previous week, but New York shows a loss, compared both with the previous week and the corsesponding week last year, due to the smaller operations in speculative circles. *Bradstreet's* says 11 Chicago firms in grain and provisions suspended on account of the failure of McGeoch, Everingham & Co. (whose liabilities the receiver estimates at $6,000,000, including $4,000,000 due to the local banks), and there were 178 failures reported in the United States during the week, which is an increase, compared with the preceding week and with the corresponding week in previous years.

The imports of foreign merchandise at the port continue slightly above the usual average, the total for the past week being $10,296,242. There was quite a good movement of both general merchandise and dry goods, the entries of the former amounting to $7,822,064 and of the latter to $2,474,178. Since January 1 the imports aggregate $222,352,870, compared with $244,272,594 for the corresponding period of 1882 and $206,840,531 for 1881. The importations of specie and bullion at this port during the week ending June 22 were $104,240, and since January 1, $6,892,465, against $1,910,659 during the corresponding period last year. Exports of produce from the port of New York for the week ended to-day were $6,407,662, against $7,153,823 for the previous week. The total exports since January 1 were $170,701,888, against $153,614,808.

Money is very easy to good borrowers, and is likely to continue so, after the temporary hardening on account of July payments in the shape of dividends and interest on bonds. We quote 60 to 90 days' indorsed bills receivable, 4 @ 5 %; four months' acceptances, 5 @ 5½.

The weekly bank statement was unexpectedly favorable, showing an increase of $191,850 in surplus reserve, which now stands at $8,982,900, against $9,381,250 at the same time last year, and $9,274,400 at the corresponding date in 1881. The loans show a gain this week of $4,296,300; the specie is up $964,000; the legal tenders are increased $581,900; the deposits other than United States are up $5,419,200, and the circulation is decreased $3200.

On the Stock Exchange during the week under review the market has been much disconcerted by the rupture at Chicago. Feverishness and irregularity were the prevailing characteristics, mainly resulting from reports respecting the financial position of various business firms, and transactions were confined chiefly to board-room trading. As a whole, prices declined ½ @ 3 %, the latter Denver and Rio Grande and Michigan Central. The exceptions were Lake Erie and Western, and Long Island, which advanced. On Friday the dividend announcements by the Vanderbilt roads fell short of expectations, and had a depressing effect, and the bears took advantage of news from the West reporting heavy damage from floods. On Saturday the market was dull, at declining prices. On Monday the bears were again in control. On Tuesday there was a further decline, New York Central selling at about the lowest price since 1879, in consequence of rumored troubles in the trunk line pool, and other stocks were raided in turn. To-day the market was irregular, and at times very weak, closing a fraction lower, compared with last evening. Several specialties dropped 1¾ @ 1¾. The principal dealings were in Denver at 43¾, 41¼, 42⅜; Louisville and Nashville at 52⅛, 51⅜, 51½; Wabash preferred at 43¾, 42½, 42¼; Western Union at 86, 85⅛, 85⅜; Lackawanna at 127¾, 127¼, 127½; Jersey Central at 86¼, 85¾, 85⅞; Reading at 57⅜, 56⅞, 57; Union Pacific at 94⅛, 93¾, 93⅞; New York Central at 119¼, 118¾, 118⅞; Michigan Central at 95 @ 94⅜; Oregon and Transcontinental, 83¼ @ 83. Remarking upon the languishing state of the stock market for a long time past, it is observed that, in a comparison with January 1st., the Vanderbilts have suffered most, viz., the New York Central 9 %, Lake Shore and Michigan Central, 6 %, and Northwest, 5 %.

Government bonds are steady, closing as follows:

	Bid.	Asked.
U. S. 5's, 1881, continued at 3¼	103⅜	—
U. S. 4½'s, 1891, registered	112⅞	113
U. S. 4½'s, 1891, coupon	112¾	113
U. S. 4's, 1907, registered	119	119⅛
U. S. 4's, 1907, coupon	120	120⅜
U. S. 3 per cents	104	104⅜
U. S. Currency 6's, 1895	127	—
U. S. Currency 6's, 1896	128	—
U. S. Currency 6's, 1897	129	—
U. S. Currency 6's, 1898	130	—
U. S. Currency 6's, 1899	131	—

State bonds were firm for Alabama, Class A, at 84, and Louisania Consols, ex-mortgage coupon, at 58½.

Foreign exchange rules quiet at $4.84½ @ $4.84¼, 60 days; $4.88 @ $4.88¼, demand. The London *Economist* of the 16th inst. says: "The demand for the use of capital for trade purposes is now very stagnant, and business on the Stock Exchange is also unusually dull; hence the the month of July is looked forward to as likely to show a very easy money market, and it is quite probable that the rate of discount current in it may fall away slightly further from the rate of the Bank of England."

The trunk line managers have at last harmonized all differences.

MINING STOCKS.

The closing quotations for mining stocks were as follows:

	Bid.	Asked.
Amie	16	...
Alice	...	3.00
Alta. Mont	2	4
Belle Isle	46	...
Bodie	...	1.05
Bulwer	70	....
Bull Domingo	....	5
Bradshaw	22	29
B. H. & E. n	5-16	....
Caled'a B. H.	70	1.00
California	17	20
Climax	9	10
Con. Imp	5	....
Con. Pay	30	45
Con. Va	48	60
Chrysolite	....	1.20
Central Ariz	30	....
Cherokee	3	4
Consol. Coal	23	....
D nkin	17	....
Decatur	4	....
Eureka Con	6¼	....
East. Or	53	55
Elko Con	19	...
Findley	....	10
Father de Smet	....	4.50
Gt. Eastern	....	2
Gr'n Mtn	72	79
Gold Stripe	8	....
Homestake	....	15½
Hukil	5	7
Horn Silver	7⅛	....
Hibernia	3	5
Independence	60	....
Iron Silver	2.95	3.00
Lacrosse	....	13
L. Pitts	75	1.00
Lucerne	55	57
Maryland C. I	11¾	....
Mexican	....	3.50
Navajo	....	3.50
N. Belle Isle	35	....
N. Cen. Coal	12.00	....
Ophir	2.50	3.00
Ori. & Mil	13	17
Pipe Life cer	1.15½	....
Rappahannock	7	9
Robinson Con	52	....
Rising Sun	....	5
Sierra Nev	....	4.10
Standard	6.62½	7.00
Silver Cliff	15	....
Sutro Tun	20	21
Silver King	10	....
Stormont	37	40
Sierra Grande	1.85	1.90
Sonora Con	....	21
Un. Con	4.50	5.00

GENERAL HARDWARE.

The volume of business is quite as large as could be expected at this season, and we believe that the majority of houses will find, when they foot up the sales of the past six months, that it makes a much more satisfactory showing than they would have dared to hope for four months ago. The increasing strength of the Pig Iron market has had favorable effect on the tone of the market. Not that an advance in Iron of a dollar or two a ton can make much difference in the price of any Hardware article, but the fact that an advance has taken place is reassuring.

Nails continue in short supply. Stocks are low and broken all through the East, being lower than they have been at this season for many years. The smaller sizes are particularly scarce. The demand continues large, and orders are coming in beyond the capacity of the mills to produce them. The price remains firm at $3, which price would have to be paid even for a large order, as sellers are not disposed to make any concessions.

At a meeting of the Bright Wire Goods Association, held at New Haven on the 20th inst., a revised list of prices was adopted, to take effect on the 25th inst., subject to a discount of 70 and 10 per cent. With some little difference in the numbering, the lists of the various manufacturers are the same. The following is that of Sargent & Co:

BRIGHT WIRE SCREW EYES.

0	1	2	3	4	5	6	7
$9.00	7.50	6.00	5.00	4.00	3.00	2.50	2.00
8	9	10	11	12	13	14	
$1.70	1.50	1.40	1.30	1.20	1.10	1.05	
104	105	106	107	108	109		
$3.10	2.60	2.20	1.80	1.60	1.45		
110	111	112	113	114&114½			
$1.35	1.25	1.15	1.05	1.00			
204	205	206	207	208	209		
$2.90	2.40	2.00	1.65	1.45	1.35		
210	211	212	213	214&214½			
$1.30	1.20	1.10	1.00	.95			

BRASS WIRE SCREW EYES.

1004	1005	1006	1007	1008	1009
$19.00	16.00	13.00	10.00	8.00	6.00
1010	1011	1012	1013	1014	
$5.00	4.00	3.50	3.00	2.50	
1104	1105	1106	1107	1108	1109
$17.00	14.00	11.00	9.00	7.00	5.00
1110	1111	1112	1113	1114 & 1114½	
$4.00	3.00	2.75	2.50	2.25	
1204	1205	1206	1207	1208	1209
$14.50	12.00	9.50	7.50	5.50	4.50
1210	1211	1212	1213	1214 & 1214½	
$3.50	2.75	2.50	2.25	2.00	

BRIGHT WIRE SCREW HOOKS.

0	1	2	3	4	5	6	6½
$12.00	10.00	8.00	7.00	6.00	5.00	4.00	3.50
7	8	9	10	11	12	13	14
$3.00	2.75	2.50	2.25	2.00	1.80	1.70	1.60
104	105	106	107	108	109		
$6.00	5.00	4.00	3.00	2.75	2.50		
110	111	112	113	114			
$2.25	2.00	1.80	1.70	1.60			

BRASS WIRE SCREW HOOKS.

1004	1005	1006	1006½	1007	1008
$22.00	18.50	15.50	14.00	11.00	8.00
1009	1010	1011	1012	1013	1014
6.50	5.25	4.25	3.50	3.00	2.75
1104	1105	1106	1107	1108	1109
$22.00	18.50	15.50	11.00	8.00	6.50
1110	1111	1112	1113	1114	
$5.25	4.25	3.50	3.00	2.75	

NO. 40, BRIGHT WIRE GATE HOOKS AND EYES.

1½	2	2½	3	3½
$7.50	7.50	8.50	10.00	11.50
4	4½	5	5½	6
12.50	14.00	15.50	17.00	19.00

NO. 1040, BRASS WIRE GATE HOOKS AND EYES.

1½	2	2½	3	3½
$12.00	16.00	20.00	25.00	32.00
4	4½	5	5½	6
$40.00	50.00	55.00	60.00	70.00

NO. 35, BRIGHT WIRE CORNICE HOOKS.

2	2½	3	3½	4	4½	5	5½
$5.00	5.50	6.00	6.50	7.00	7.50	8.50	9.50
6	7	8	9	10	11	12	
$10.50	11.50	13.50	15.50	17.50	20.50	23.50	

NO. 30, BRIGHT WIRE CORNICE HOOKS, WITH EYES.

$6.50	7.00	7.50	8.00	8.50	9.00
10.00	11.00	12.00	13.00	15.00	17.00
	19.00		22.00	25.00	

TINNED MEAT HOOKS.

43	44	45
$12.00	10.00	9.00

STAIR-ROD EYES.

403, Bright.	409, Bronzed.	410, Brass.
$2.00	2.50	3.00

BIRD-CAGE EYES.

18	218	1018	1218
$2.70	2.30	3.00	5.50

At a meeting of the Pump Manufacturers' Association of the United States, held at the Adelphi House, Saratoga Springs, N. Y., on the 13th instant, the following prices were adopted:

Pitcher Pumps ..... dis. 50 %
Cistern Pumps ..... 40 %

Well, Yard and Yard Force Pumps, Deep Well and Deep Well Force Pumps, and Set-Length Pumps, with or without Windmill Tops......40 %
Brass and Brass Cylinder Cistern and Pitcher Pumps, Iron and Brass Cylinder Hand and House Force Pumps, Single or Double Acting, and All Brass Hand Force Pumps.......35 %
Hand Rotary Force Pumps, Hand Rotary Barrel Pumps, and Hand Rotary Force Pumps on Frame..........30 %
Boiler Feed Pumps, with Pulleys or at b ends, or for hand use, Two-Cylinder Pumps, Horizontal Force Pumps, Hydraulic Rams and Garden Engines..........25 %
Windmill, Lift and Force Pump Standards....45 %
Cylinders or Working Sections (Single Acting), new list..........60 %
Double-Acting Cylinders or Working Sections and Fig. 281..........35 %

A meeting of the File Manufacturers' Association was held at the Astor House last week. Fully nine-tenths of all the File Manufacturing interest of the country was represented, and a general good feeling prevailed. The ruinously low prices upon Files which have been prevailing of late were checked by an agreement signed by all present, fixing "factory rates" at 45 per cent. from the list of June, 1881, to take effect immediately..

The Ashtabula Tool Co., manufacturers of Forks and Rakes, have appointed Dodman & Burke, 100 Chambers street, New York, their direct representatives, who will be prepared at all times to quote their lowest prices.

The Henry B. Newhall Co., 105 Chambers and 89 Reade streets, have been appointed general agents of the Port Chester Bolt and Nut Co., who manufacture a full line of Tire Bolts in all qualities.

The Yale Caster Co. have appointed John Duer & Sons, of Baltimore, their Southern agents for the sale of their goods, of which they will carry a full line in stock. They ask us to publish the following reply to the letter of the Phœnix Caster Co., which appeared in our issue of the 14th instant. As this controversy can never be settled by discussion in our columns, we will consider it closed, so far as we are concerned, and refer the disputants to that other "forum" in which they both seem anxious to appear.

NEW HAVEN, Conn., June 25, 1883.

Except that our silence might be misconstrued, we should take no further notice of the very singular course adopted by the Phœnix Caster Co. After having inconsiderately rushed into print with a deceptive statement of their sham law suits, they found they had fired a boomerang. They now precipitately retreat with ungraceful strides from their third or fourth chosen "forum," still breathing threats of violence as they run. We will welcome them most cordially to that other "forum," and will try and make it interesting for them while they stay. As they are already armed with their unquestionable "decrees," we see no reason why they should not try an injunction. This might virtually decide the case too quick to suit the line of tactics they have planned, and the public might learn too soon how they had been imposed upon by the deceptions and the "patent" swagger of these doughty gentlemen. They have posed for years as the owners of a patent covering a caster with two floor wheels and a friction roller.

We have before stated, in our circular to the trade, and in a former letter, that such a caster, exactly as we both use it, was made and patented over 40 years ago. Aside from this old caster, we use no device which Martin either invented, uses or makes any claim to whatever in his patent. This they well know, and accounts for the course of bullying on which they have rung so many changes, from their straw suits away down down to their retreat with such a flourish from the columns of *The Iron Age*.

Their stove-truck patent, over which they make such a furore, was an old patent of 1871, bought up and reissued by them eight years later. It originally consisted of a single claim, but they enlarged it in the reissue to eight claims, mostly new, embracing not only all the stove trucks invented in the meantime, but devices well known to the stove trade ever since stoves were sold. It was clearly one of the most aggravated of that class of patents, all of which were wiped out of existence by the sweeping decision of the Supreme Court of January 9, 1882, and reaffirmed by every court since, more recently in patent barbed fence-wire suits. The Court well says: "These afterthoughts developed by subsequent improvements, and intended by an expansion of claims to sweep into one net all the appliances necessary to monopolize a profitable manufacture, are obnoxious to grave animadversion." * * * "Every independent inventor, every mechanic, every citizen, is affected by such a delay, and by the issue of a patent with a broader and more comprehensive claim.

"The granting of a reissue for such a purpose, after an unreasonable delay, is clearly an abuse of the power to grant reissues, and may justly be declared illegal and void.

"It will not do for the patentee to wait until other inventors have produced new forms of improvement, and then with the new light thus acquired, under pretense of inadvertence and mistake, apply for such an enlargement of his claim as to make it embrace these new forms.

"Such a process of expansion carried on indefinitely, without regard to lapse of time, would operate most unjustly against the public, and is totally unauthorized by law."

These are examples of the suits brought against their clever and accommodating neighbor, which these brilliant gentlemen were so solicitous that we should go to Indiana to defend. YALE CASTER CO.

IRON.

American Pig.—The features of strength which have been remarked of late have continued to develop until we can report a very decided improvement in the feeling of the trade, both buyers and sellers, and an advance in quotations. There is a good deal of inquiry in a quiet way, and producers manifest less inclination to sell for future delivery than has been the case for a long time. There is a very general feeling that higher prices must prevail, especially for No. 1, of which 100 tons for October delivery have been sold at $23.25. This grade is in even smaller supply than has been supposed, and the summer months are always unfavorable for its production. We note sales of about 2700 tons at $21 @ $22.50, of which one lot of 700 tons was $21, spot cash. The Thomas Iron Co. report the sale of 6000 tons Gray Forge and No. 2 Foundry at $19 and $20. We quote Foundry No. 1, $21 @ $22.50; Foundry No. 2, $19 @ $20; Gray Forge, $18 @ $19.

Scotch Pig.—There is no change in the tone of the market, unless it may be called a shade firmer on account of the advance in freights, which more than counterbalances the slight decline in the Glasgow market. There is very little doing, the activity in American Iron not having affected Scotch. We quote Eglinton, $21 from ship, $21.50 from yard; Carnbroe, $22 from yard; Glengarnock, $22.50 @ $23 from ship and yard; Dalmellington, $21.50 @ $22 from ship; Summerlee, $24 from ship; Coltness, $24.50 @ $24.75 from ship; Gartsherrie, $25 from yard; Langloan, $24 from ship.

Steel Rails.—We note sales of 20,000 tons at about $38 at mill, some of them being a shade under that price, which, however, we continue to quote as the usual quotation.

Old Rails.—There is little or no movement in this article. The market is bare of goods, there is no inquiry, and in the absence of transactions we continue our quotation of $22 @ $23.

Bar Iron.—The market for Merchant Bar Iron has ruled remarkably quiet during the past week. Buyers continue to sustain the hand-to-mouth system adopted several months ago, though apparently with less apprehension of a further decline in price than was noted about the first of the month. The "shutting-down" time being near at hand, manufacturers are a little more reserved in their efforts to sell, which gives a stronger tone to the market and the prospect of less available stock for the next six or eight weeks. Refined Iron is quoted from the mills at $1.90 @ $2.10, with a desire to adhere more closely to the figures than existed a week or two ago. The demand from store has not improved, and dealers are having a favorable opportunity to take their summer vacations without running the risk of losing business. From store Refined Iron is quoted at $2.30 @ $2.40, and Common at $2.10 @ $2.20.

Scrap Iron.—The demand for Yard Scrap continues very light, with considerable margin in price between sellers and buyers. A small trade is doing in cargo lots, ex-ship. We continue last week's quotations for Selected Yard Scrap at $24 @ $25, and ex-ship at $22 @ $23.

METALS.

Copper.—The market has gradually subsided into a very dull, not to say weak, mood, and we hear some of the manufacturers who recently bought in the great purchase have been re-sellers. In this manner a couple of hundred thousand lb have changed hands, of Lake Copper at 15¼¢ @ 15⅜¢, while other brands sell at 14¢ @ 14½¢; these are also the closing quotations. From London we are cabled this afternoon to the following effect: "Market a little firmer. Best Selected, £69 @ £70, and Chili Bars, £64 @ £64. 10/." Manufactures may be quoted as under: Bottoms, 24¢; Braziers, 24¢; Sheathing, 22¢, and Bolt Copper, 24¢. These rates, we presume, may still be shaded.

Tin.—More life has got into the market both here and in Europe; London had gone down all the way to £93. 5/ with Straits Tin, but yesterday recovered to £94. 5/, while here we have risen from 21¢ yesterday to 21¼¢ to-day. L. and F. is worth 22¢. We are cabled to-day from London as under: "Market a little stronger. Straits Ingot, spot, £94 @ £94. 10/, and futures, £95 @ £95. 10/." Messrs. Gilfillan, Wood & Co., Singapore, make the shipments from the Straits settlements to the United States during the first four months of the year 34,866 piculs of 134 lb, against 39,176 last year; 63,913 in 1881, 36,155 in 1880, 21,590 in 1879, and 18,511 in 1878.

IMPORT INTO THE UNITED STATES.
(July 1 to May 1.)

	1883. Cwt.	1883. Value.
	208,786	$5,405,880
Re-export	898	23,536
Net import	207,888	$5,382,344
Or tons	10,394	

	1882. Cwt.	1882. Value.
	157,565	$4,131,743
Re-export	22,233	573,235
Net import	135,332	$3,558,508
Or tons	6,767	

Tin Plates—Have been very quiet. The stock out of bond is quite light, so that some lots just arriving are entered paying the higher duty rather than wait till July 1 next, because the plates are wanted right off. We quote to-day, large lines, ordinary brands, ⅌ box: Charcoal Bright, $5.87½ @ $6.25; do. Ternes, $5.12½ @ $5.37½; Coke Tin, $5.12½ @ $5.25, and do. Ternes, $4.87½ @ $5. Liverpool these last few days has been quite strong, a good trade with this country being looked for. From London we are told to-day that the market is steady.

IMPORT INTO THE UNITED STATES.
(July 1 to May 1.)

	1883. Cwt.	1883. Value.
Total import	3,591,857	$14,752,518
Re-export	12,748	55,233
Net import	3,579,109	$14,697,285
Or tons	178,956	

	1882. Cwt.	1882. Value.
Total import	3,195,357	$13,289,970
Re-export	12,293	53,153
Net import	3,183,064	$13,236,817
Or tons	159,153	

Lead.—Since our last report, 1000 tons sold at $4.40 @ $4.42½, part of it Germania, to arrive, since when the market continues quiet, but firm, at $4.40 @ $4.42½ for Common Domestic, and $4.42½ @ $4.45 for Corroding. St. Louis is quiet at $4.12½ for Hard, and $4.15 for Corroding; freight as before; We receive the ensuing cablegram from London this afternoon: "Market a little lower. Common English Pig, £12. 17/6 @ £13. 2/6." Manufactures are quoted as follows: Lead Pipe, 6¾¢; Sheet Lead, 7½¢; Tin-lined Lead Pipe, 15¢ ⅌ lb., and Block-tin Pipe, 45¢, less the usual discount to dealers.

Spelter—Is duller and weaker even than before; very little transpires, and that little at $4.50 @ $4.60 for Common Domestic. We quote Silesian 5⅛¢, nominally; Bertha Refined, 7¾¢ @ 8¢, and Bergenport, 9½¢. *Sheet Zinc* is inactive at 6¢. From London we receive the following cable message: "Spelter unchanged. Ordinary, £15 @ £15. 2/6 at shipping ports."

IMPORT INTO THE UNITED STATES.
July 1 to May 1.

	1883 Pounds.	1883 Value.
Spelter	14,535,722	$565,568
Sheet zinc	2,811,925	122,601
Total	17,347,647	$688,169
Re-export, sheet zinc	3,531	188
Net import	17,344,116	$687,981
Or tons	7,743	

	1882 Pounds.	1882 Value.
Spelter	14,819,032	$502,398
Sheet zinc	2,791,316	128,653
Total	17,610,348	$721,051
Re-export, sheet zinc	14,376	661
Net import	17,605,972	$720,390
Or tons	7,860	

Antimony.—This metal lacks animation at $10.70 for Cookson and $9.70 Hallett.

COAL.

An advance in the prices of Anthracite Coal July 1 has been agreed to by nearly all the principal producing companies. The figures named are 10¢ a ton on Broken, 15¢ on Egg and 25¢ on Stove and Chestnut, at tidewater. The Pennsylvania Coal Co., we understand, will make a slight advance on some sizes, but not on all. The several announcements by the Delaware and Lackawanna and other companies will be out in a day or two. The market, as a whole, is considered in better shape than for some time past, and gradually improving. There is little, if any, cutting of prices anywhere, unless some of the inferior Coals are excepted. Prime qualities are firmly held. Stocks generally are supposed to be light, but, so far as manufacturers are concerned, the advance is believed to be without warrant.

In the Eastern trade colliers now have the advantage of ample return freights of ice, the movement of which is heavy from the Kennebec to all the Coal ports.

Bituminous is without change, and for Cumberland is quoted about $4.25; Clearfield, $3.75 @ $4. The *Miners' Journal* says there is a considerably better demand for Coal for shipment to Eastern and Southern points, and the facilities for shipment are also much improved, so that the accumulations at tidewater points, which were reduced last month to 645,377 tons, now aggregate scarcely 500,000 tons. The improved demand will soon take up this quantity, and the necessity for further suspension be removed.

FOREIGN TRADE MOVEMENTS.

The following is a summary of foreign trade movements during the past week:

IMPORTS.

For the week ended June 23:

	1881.	1882.	1883.
Total for week	$7,837,194	$7,158,533	$10,296,242
Prev. reported	199,063,274	$238,512,619	$211,054,998
Since Jan. 1	$206,900,468	245,671,152	221,351,240

Included in the imports were leading articles of merchandise valued as follows:

	Pkges.	Value.
Antimony	50	$319
Aluminum	1	690
Brass goods	107	13,003
Bronzes	35	5,109
Chains and anchors	1	7
Clocks	17	1,838
Copper	...	5,460
Cutlery	238	78,659
Guns	29	6,012
hardware	17	2,689
Iron, pig, tons	4,229	102,997
Iron, sheet, tons	71	5,028
Iron ore, tons	2,100	5,528
Iron, other, tons	1,283	58,542
Lead, pigs	790	3,060
Machinery	47	25,008
Metal goods	826	28,476
Nails	27	1,742
Needles	6	1,821
Nickel	30	4,380
Old metal	...	4,723
Platina	4	12,294
Plated ware	5	612
Per. caps	22	4,296
Pins	4	173
Quicksilver	600	15,813
Saddlery	25	3,130
Steel	97,520	208,382
Spelter, lbs	686,558	24,561
Tin, bxs	53,442	266,040
Tin, 1,089 slabs, 112,415 lbs	...	25,504
Wire	2,736	16,035
Zinc, lbs	60,170	2,557
Zinc oxide	151	1,596

The quantity of hardware and metals imported compares with previous dates as follows:

	For the week.	25 weeks of 1883.	Same time 1882.
Cutlery, pkgs	238	3,534	3,474
Hardware, pkgs	17	670	511
Iron, R. R., bars	...	6,324	74,310
Lead, pigs	790	3,637	16,544
Steel, pkgs	97,520	1,870,191	1,007,822
Tin, bxs	53,442	899,355	1,055,051
Tin slabs, lbs	112,415	10,034,548	8,340,819

EXPORTS OF SPECIE.

For the week ended June 23:

Total	$351,100
Previously reported	6,719,704
Total since January 1, 1883	$7,070,804
Same time in 1882	34,283,437
Same time in 1881	5,420,941
Same time in 1880	4,602,268
Same time in 1879	11,152,503
Same time in 1878	8,579,582
Same time in 1877	19,561,172
Same time in 1876	30,117,152
Same time in 1875	53,944,686
Same time in 1874	28,210,599
Same time in 1873	27,372,729
Same time in 1872	36,637,644

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the week ending June 26, 1883.

	Quan.	Val.
Dutch West Indies.		
Ptlm., gals	2295	$240
Bell	1	32
Mach'y, pkgs.	2	182
Dutch East Indies.		
Ptlm., gals	958,250	99,965
Bremen.		
Hdw., pkgs	75	1,762
Cutlery, cs	3	100
Mach'y, pkgs.	7	770
Mf. iron, pkgs	11	500
Ag. imp., pkgs	7	492
Sundsvall.		
Ptlm., gals	96,003	7,600
Hamburg.		
Clocks, pkgs	117	4,104
Ag. imp., pkgs	216	2,932
Wringers, cs	12	299
Br. g'ds, case	1	50
Ore. sacks	234	10,000
Sew. ma., cs	1519	23,826
Hdw., pkgs	18	980
Revolvers, cse.	1	275
Mach'y, pkgs.	3	738
Ptlm., gals	186,182	19,603
Christiania.		
Hdw., pkgs	7	95
Antwerp.		
Ptlm., gals	816,415	65,312
Hdw., cs	16	269
Sew. ma., cse.	1	30
Ag. imp, pkgs	199	4,227
Amsterdam.		
Ptlm., gals	146,413	11,550
Copenhagen.		
Clocks, pkgs	21	582
Harlingen.		
Ptlm, gals	122,016	9,875
Sodertelfe.		
Ptlm. gals	107,450	8,600
Abo.		
Ptlm., gals	117,307	9,385
Stockholm.		
Mf. iron, pkgs	429	5,480
Stettin.		
Ptlm, gals	118,050	9,500
Bristol.		
Hdw., cs	4	160
Mach'y, pkgs.	20	2,184
Clocks, pkgs	13	240
Liverpool.		
Hdw., pkgs	29	1,417
Cop.mat., bgs	3879	32,628
Ag. imp., pkgs	70	1,275
Scales, cs	9	420
Clocks, cs	91	1,692
Sew. ma., cs	38	823
Guns, cs	5	60
Mach'y, pkgs	17	2,520
Copper, slabs	302	4,000
Cutlery, bxs	14	199
Nkl. plate, cse	1	150
M. rollers	2727	1,500
Pistols, cs	3	900
Mf. iron, pkgs	10	192
Pumps, pkgs	4	221
Hull.		
Hdw., cs	75	1,041
Cutlery, cs	4	250
Mach'y, pkgs	24	2,761
Scales, cs	2	70
Ag. imp., pkgs	10	1,014
Clocks, pkgs	97	1,480
W. rope, reel	1	242
Queenstown.		
Ptlm., gals	49,300	4,067
Gibraltar.		
Scales, bxs	3	86
London.		
Mach'y, pkgs.	5	1,151
Turbines	4	800
Scales, cs	20	267
Sew. ma., cs	92	9,400
Guns, case	1	57
S. rollers, cs	22	755
Clocks, pkgs	126	4,335
Hdw., pkgs	182	4,133
Ag. imp., pkgs	296	9,000
Mf. iron, pkgs	8	358
Glasgow.		
Cartridges, cs	3	100
Clocks, cs	25	375
Hdw., cs	30	1,203
Saws, cs	15	35
Sew. machnes	7	297
Mach'y, pkgs.	6	657
Pumps, pkgs.	3	200
British Possessions in Africa.		
Hdw., pkgs	259	4,448
Nails, kegs	200	770
Mf. iron, pkgs	36	245
Nails, cs	32	126
Ptlm., gals	32,710	4,330
Ag. imp., pkgs	155	2,926
Guns, cs	2	60
Clocks, pkgs.	20	290
British East Indies.		
Ptlm., gals	998,030	96,100
New Brunswick.		
Ptlm., gals	25,000	2,805
British West Indies.		
Ptlm., gals	4992	580
Hdw., pkgs	29	289
Pumps, pkgs.	3	23
Mach'y, pkgs.	21	334
Mf. iron, pkgs	19	265
Tinware, cs	11	161
Nails, kegs	44	239
Sew. machns.	4	85
Scales, cs	8	98
Cutlery, case.	1	40
Y. met. sht'g, case	1	71
Ag.imp., pkgs.	14	173
Clocks, cs	3	74
Iron safe	1	150
Windlass	1	70
Newfoundland.		
Mf. iron, pkgs	16	40
Cutlery, case.	1	20
Hdw., case	1	29
Stmpdwre. cse	1	100
Ld. pipe, pkgs	2	40
Nova Scotia.		
Ptlm., gals	3750	400
Mf. iron, pkgs	3	37
Hdw., pkgs	20	445
British Guiana.		
Mach'y, pkgs.	42	405
Havre.		
Ag. imp., pkgs	141	10,780
P.O. lock bxs, cs	4	690
Hdw., pkgs.	9	1,330
Guns, cs	2	40
Copper, pigs	70	2,400
Pumps, pkgs.	11	802
Mach'y, pkgs.	10	2,950
Cartridges, cs	3	140
Marseilles.		
Mach'y, pkgs.	6	709
Cette.		
Ptlm., gals	130,509	8,700
Blaye.		
Ptlm., gals	231,235	17,268
Naph., gls	117,154	6,443
Bordeaux.		
Ptlm., gals	230,936	17,320
Cuba.		
Mf iron, pkgs	581	5,419
Spikes, pkgs	56	183
Steel plates	2	54
Pumps, pkgs.	4	110
Sew. ma., cs	76	1,231
Clocks, cs	10	187
Ptlm., gals	1740	330
Tinfoil, case	1	25
W.closets, cse	1	18

	Quan.	Val.
Nails, kegs	112	362
Iron safe	1	70
Brass g'ds, cse	1	63
Mach'y, pkgs.	54	1,912
Iron tubes	100	350
Hdw., pkgs	276	3,350
Scales, cs	75	958
Valves, cs	3	130
Saws, cs	3	80
Ag. imp., pkgs	17	772
Lead, bxs	2	32
Cutlery, cs	46	961
Tacks, cs	2	61
Min'g r'ds, pgs	36	700
Shoe nails, cs.	3	120
Blocks, pkgs.	2	203
Nails, cks	5	80
Bellows	5	200
Spanish Possessions in Africa.		
Ptlm., gals	20,550	2,086
Clocks, pkgs	2	35
Sew. ma., cs	21	188
Mf. iron, pkgs	5	115
Hdw., pkgs	36	180
Porto Rico.		
Wheels, sets	5	236
Hdw., pkgs	22	282
Ag. imp., pkgs	21	529
Mach'y, pkgs.	2	145
Sew. ma., cs	1	50
Ptlm., gals	19,948	2,129
I. tubes, bdls	18	75
Scales, cs	12	259
Mf. iron, pkgs	203	517
Bath tubs, pgs	2	23
Saws, cs	2	81
Nails, kegs	131	468
Cutlery, cs	3	194
Pumps, pkgs	2	80
Clocks, pkgs	3	38
Alexandria.		
Ptlm., gals	232,440	20,916
Santo Domingo.		
Hdw, pkgs	5	149
Mach'y, pkgs.	180	5,185
Mf. iron, pkgs	8	8
Ptlm., gals	2700	329
Bells, cs	2	187
Boilers	2	3,400
Sew. ma., cs	20	546
Clocks, case	1	21
Uruguay.		
Ptlm., gals	131,000	14,597
Sew. ma., cs	13	208
Wire, bxs	332	3,850
Mach'y, pkgs.	20	1,390
Hdw., pkgs	14	225
Ag.imp., pkgs.	521	17,435
French Possessions in Africa.		
Ptlm., gals	171,120	15,828
Mexico.		
Clocks, pkgs	11	394
Revolvers, cse	1	108
Iron, bars	70	78
Cartridges, cs	245	3,983
Pig iron, tons	10	170
Arms, cs	44	12,811
Per. caps, pgs	4	188
Cop. g'ds, cse.	1	40
W. closets	6	25
Mf. iron, pkgs	216	2,677
Sew. ma., cs	490	9,074
Br. goods, pgs	33	608
Nails, cs	50	334
Wire g'ds, cs.	10	163
Iron pipe, pcs.	21	165
Carbines, cs	2	308
Axles	200	613
W. rope, reel.	1	600
Pumps, pkgs.	5	163
Tacks, case	1	33
Hdw., pkgs	751	12,834
Ag. imp., pkgs	182	2,381
Cutlery, cs	17	1,165
Locomotive	1	9,222
Saws, case	1	25
Ptlm., gals	47,500	4,815
Nails, kegs	295	936
Nails, pkgs	138	1,088
Pistols, cs	3	1,906
Iron safe	1	55
Scales, pkgs	30	315
Mach'y, pkgs.	77	5,095
Zinc, bbl	1	30
Valves, cs	3	500
Plumb'rs' materials, cs	14	1,560
Rifles, cs	18	2,762
Trieste.		
Ptlm., gals	424,179	34,850
French West Indies.		
Ptlm., gals	10,000	1,000
St. Pierre (Miquelon.)		
Ptlm., gals	748	68
Valencia.		
Sew. ma., cs	9	165
Venezuela.		
Ptlm., gals	4640	567
Hdw., pkgs	64	1,108
Clocks, pkgs	4	120
Nails, kegs	58	214
Q'silver, flaks	18	497
Mf. iron, pkgs.	60	1,309
Mach'y, pkgs.	644	5,146
Cutlery, cs	9	266
Ag. imp., pkgs	5	76
Lead, roll	1	31
Anchors	15	43
Pumps, pkgs.	6	1,603
Iron bars	27	56
Sew. ma., cs	21	603
Axles	6	69
Naples.		
Hdw., cs	16	1,095
Sew. ma., cs	6	130
Sandwich Islands.		
Boiler	1	2,000
Ptlm., gals	100,000	14,140
Nails, cs	33	350
Irons, pkgs	301	290
Nails, kegs	888	2,405
Mach'y, pkgs.	77	18,635
Mf. iron, pkgs	2125	17,115
Hdw., pkgs	2104	19,355
Ag. imp., pkgs	202	6,750
Steel, pkgs	12	165
Pig iron, tons.	60	2,180
Japan.		
Mach'y, pkgs.	3	350
Cartridges, cs	3	90
Br. tubes, cs	30	893
Mf. iron, pkgs	1	63
Pistols, case	1	93
United States of Colombia.		
Sew. ma., cs	75	1,670
Mf. iron, pkgs	204	2,454
Ptlm., gals	3316	468
Cutlery, pkgs.	31	943
Ag. imp., pkgs	6	160
Locomotive	1	8,400
Cartridges, cs	8	155
Sht.lead, rolls	2	68
Sheating, cs	8	539
Steel, pkgs	6	44
Arms, case	1	30
Cop. g'ds, case	1	231
Mach'y, pkgs.	73	4,306
Hdw., pkgs	69	1,673
Guns, cs	2	210
Clocks, cs	9	190
Revolvers, cs.	5	1,002
Nails, kegs	114	360
Iron safes	6	745
Nails, cs	5	52
Pumps, pkgs.	5	195
Fountain	1	28
Spikes, pkgs	10	36
Cadiz.		
Hdw., case	1	13
Seville.		
Pumps, pkgs.	11	900
Mf. iron, pkgs.	6	55
Piræus.		
Ptlm, gals	122,340	11,011

	Quan.	Val.
Genoa.		
Pumps, pkgs.	3	132
Hdw., cs	25	951
Constantinople.		
Ptlm., gals	139,800	12,760
Salonica.		
Ptlm., gals	191,520	18,000
Argentine Republic.		
Ag.imp., pkgs	1314	37,805
Ptlm., gals	113,500	11,400
Pistols, cs	2	736
Clocks, pkgs	29	1,337
Hdw., pkgs	61	1,121
Mach'y, pkgs.	26	1,938
Wsh. machns.	12	125
Mf. iron, pkgs	51	647
Guns, case	1	25
Sew. ma., cs	219	4,151
Cartridges, cs	2	45
Whls. & axles, pairs	36	650
Pumps, pkgs.	4	170
Wire, bxs	300	3,600

	Quan.	Val.
China.		
Cartridges, cs.	525	15,750
Locks, cs	3	150
Brazil.		
Ptlm. gals	205,089	21,503
Mf. iron, pkgs	22	312
Cartridges, cs.	10	150
Nails, cs	4	75
Clocks, cs	52	843
Revolvers, cse	1	344
Pumps, case.	1	24
Car wheels	33	240
Hdw., pkgs	141	4,379
Sew ma., cs	77	1,534
Cutlery, cs	152	4,533
Nails, kegs	234	795
Scales, pkgs	49	453
Guns, cs	2	100
Rifles, cs	4	316
Needles, cs	3	294
Saws, cs	2	50
Iron safes	5	882
Tacks, case	1	17
Mach'y, pkgs.	10	815
Ag. imp., pkgs	27	559

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending June 27, 1883.

Hardware.

Alexandre's F. Sons,
Ironware, cs., 10
Boker Hermann & Co.
Hdw., guns and cutlery, cs, 83
Clark Spool Cotton Co.
Mach'y, pkgs. and pcs., 595
Curley J. & Bros.
Cutlery, cs., 7
Dolge A.
Mdse., cs., 3
Drexel, Morgan & Co.
Arms, cs., 15
Duval H. R.
Mdse., cs., 4
Fellheimer Isidor,
Nails, cks., 41
Nails, cs., 24
Field Alfred & Co.
Mdse, cs., 18
Folsom H. & D.
Arms, case, 1
Frasse P. A. & Co.
Mdse., cs., 3
Graef Cutlery Co.
Cutlery, cs., 14
Cases, 11
Barrel, 1
Hildick A. H.
Chains, cks., 4
Hartley, & Graham,
Mdse., cs., 3
Guns, cs., 7
Cask, 1
Josephthal Bros.
Cases, 12
Markt & Co.
Mdse., 96
Merchants' Dispatch Co.
Arms, cs., 16
Corking machine, 1
Morton, Bliss & Co.
Nails, cs., 850
Moore's J. P. Sons,
Mdse., cs., 7
Palmer Lowell M.
Nails, kegs, 104
Rosenthal J. & Co.
Cases, 4
Russell & Erwin Mfg. Co.
Mdse., cs., 3
Schoverling, Daly & Gales,
Arms, cs., 8
Mdse., cs., 5
Sellers Wm. B.
Mdse., case, 1
Taylor, Thomas,
Mdse., cs., 3
The Barbour Bros. Co.
Mach'y, cs., 23
Vom Cleff & Co.
Ironware, cs., 8
Ward Alsine,
Mdse., cs., 7
Witte John G. & Bro.
Mdse., pkgs., 3
Cases, 11
Wiebusch, Hilger & Co.
Hdw., cutlery and guns, pkgs., 68
Order,
Corkscrews, cse., 1
Knife bands, cs., 2
Mach'y, case, 1
Arms, case, 1
Gun barrels, cs., 10
Rivets, pkgs, 19
Bolts and nuts, pkg., 1
Cutlery, case, 1
Razors, case, 1
Cases, 2

Iron.

Anglo-American R. Co.
Sheets, cs., 773
Baring Bros. & Co.
Rods, bdls., 15,198
Wire rds, bdls., 2,818
Berbecker J. & Co.
Rods, pkgs, 7
Brown Bros. & Co.
Swedish nail rods, coils, 121
Swedish rivet-wire rods, coils, 410
Crocker Bros.
Pig, tons, 200
Coddington T. B. & Co.
Sheets, bdls., 433
Sheets, bxs., 83
Drummond McCall & Co.
Pig, tons, 150
Great Western Disp. Co.
Wire rope, coils, 6
Lee James & Co.
Pig, tons, 100
Merchants' Disp Co.
Bars, 120
Bundles, 140
Rails, pkgs., 9
Naylor & Co.
Spiegel, cks, 146
Plock & Co.
Rods, bdls., 387
Stetson G. W. & Co.
Pig, tons, 100
Tilloteon L. G.
Gal. wire, coils, 256
Wheeler, Isaacson & Co.
Pig, tons, 200
Williamson J. & Co.
Pig, tons, 300

Williams H. E.
Oxide, cks, 76
Order,
Pig, tons, 1,955
Bars, 18,730
Wrought beams, 418
Scrap, tons, 200
Iron wire, pkge., 1
Crop ends, tons, 500
Rods, bdls., 12,178
Spiegel, tons, 412¼
Coiled rods, bdls., 2655
Bundles, 40
Fish plates, bdls., 50
Wr't iron, pkgs, 13
Coiled rods, pkgs., 1042
Wheels, 40
Rail ends, tons, 280
Sheets, bxs., 34
Oxide, cks., 300
Rods, pkgs., 11,391
Old wrought scrap, kg., 203,200

Steel.

Abbott, Jere & Co.
Cases, 35
Bundles, 17
Wire rods, coils, 200
Brown Wm.
Packages, 122
Carey & Moen,
Casks, 51
Curran John,
Packages, 10
First Nat. Bank Chicago,
Blooms, 870
Grammont Spring Co.
Mdse., cs., 7
Hartman Steel Wire Co.
Mdse., pkgs., 3
Lazard Freres,
Wire, rings, 10,404
Ladenburg, Thalmann & Co.
Wire, rings, 2276
Bars, 398
Plock & Co.
Tires, 117
Sanders Bros.
Bloom ends, tons, 154½
Villeverde N.
Spring rollers, case, 1
Order,
Rails, 838
Rails, tons, 300
Gal. wire, cks., 17
Rods, bdls., 2567
Bands, 440
Forgings, 16
Bar, 1
Cases, 18
Old spring, tons, 9136
Rail ends, tons, 838
Blooms, 72
Bloom ends, tons, 151
Tires, 26
Bess. rails, 1206

Metals.

Bache, Semon & Co.
Tin, cs., 20
Bond, Farsons & Co.
Black taggers, bxs., 250
Tin plates, bxs., 1826
Cort N. L. & Co.
Tin plates, bxs., 1780
Dickerson, Van Dusen Co.
Tin plates, bxs., 2711
Downing, Sheldon & Co.
Tin plates, bxs., 249
Echeverria M. & Co.
Tin, bars, 603
Jex Wm. & Co.
Metal, case., 1
Lake Erie & W. R. R. Co.
Black plates, bxs., 255
Lamarche's H. Sons,
Rolled zinc, cks., 37
Montell F. T. & Son,
Metal, bbls., 1586
Noel & Son,
Tin, cs., 19
Phelps, Dodge & Co.
Tin plates, bxs., 2828
Randolph A. D. F. & Co.
Stereotype plates, cs., 10
Straus A. D. & Co.
Old metal, cks., 8
Windmuller & Roelker,
Quicksilver, bottles, 100
Zinc oxide, cks., 8
Order,
Tin plates, bxs., 31,497
Tin, slabs, 1865
Zinc dust, cks., 2
Spelter, ingots, 3496
Tin, ingots, 600
Tin, bdls., 5
Quicksilver, bottles, 650
Tin sheets, pkgs., 60
Tin and terne taggers, bxs., 2049
Black taggers, bxs., 300
Antimony, cks., 100

OLD METALS, PAPER STOCK, &c.

The purchasing prices offered by dealers are as follows:

Copper, heavy	⅌ lb.	$ .12½	@	.13
" light	"	.10	@	.10¼
Copper Bottoms	"	.10	@	.10½
Yellow Metal	"	.07½	@	.08
Brass, heavy	"	.09½	@	.10
" light	"	.07½	@	.....
Composition, heavy	"	.12½	@	.13
Lead, heavy	"	.04	@	.....
Tea Lead	"	.03¼	@	.....
Zinc	"	.02¾	@	.....
Pewter, No. 1	"	.12	@	.....
" No. 2	"	.08	@	.....
Wrought Iron	⅌ ton.	22.50	@	.....
Light "	"	12.00	@	13.00
Stove Plate	"	11.50	@	12.00
Machinery "	"	14.50	@	15.00
Grate Bars	"	4.50	@	.....
Stereotype Plates	⅌ lb.	.04½	@	.05
Electrotype "	"	.04¾	@	.04½
Small Type	"	.05	@	.05½

The prices current (prices paid by local dealers) for Rags, &c., are as follows:

Canvas, Linen	⅌ lb.	3½c.	@	4 c.
White Cotton, New	"	3½c.	@	.....
" No. 2	"	2½c.	@	2¾c.

White, No. 1	"	3¼c. @ 4 c.
" No. 2	"	1¾c. @ 2 c.
Seconds	"	½c. @ 1 c.
Soft Woolens	"	5 c. @ 6 c.
Mixed Rags	"	1½c. @ 1¾c.
Gunny Bagging	"	1½c. @ ....
Jute Butts	"	1¼c. @ ....
Kentucky Bagging	"	.... @ 3¼c.
Book Stock	"	1¾c. @ 2 c.
Newspapers	"	1 c. @ ....
Waste Paper and Scraps	"	½c. @ ....
Kentucky Bale Rope	"	3½c. @ 4 c.

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, June 26, 1883.

Pig Iron.—There is no change of special importance, although No. 1 Foundry is in more active demand and held with considerable firmness. It is regarded as certain that this class of Iron has touched bottom for the present. Consumers are showing their confidence and strengthening the market by buying larger lots than usual, and holders, finding this to be the case, are becoming less anxious for business, so that it would be almost impossible to place orders of any amount at the rates ruling a week or two ago. Prices are nominally unchanged, but very little good Iron can be had at less than $21, delivered, although some good brands are still available in limited quantities at $20. Others are held at $22, and from that up to $23.50 for a few strictly choice makes, which always command a premium of a dollar or two beyond the general market. Sales have been in good sized lots, several of 500 to 1000 tons each having been reported, and one or two in still larger quantities. A 1000-ton lot of Allentown was sold from second hands at $20.50, delivered at Perth Amboy. The Allentown Iron Co., however, claim to be firm at $22 for the same delivery. No. 2 sells very slowly, and may still be quoted dull and weak at prices ranging from $18.50 to $20, delivered. The most difficult article to quote is Gray Forge, which is weak and irregular at all sorts of prices. A few leading brands still command $20, delivered, but others can be had at prices ranging from $18.50 down, the heaviest business being at about $18 @ $18.50, for what are recognized as good Neutral Irons, all Philadelphia delivery. What the future is to be no one appears to know. No. 1 Foundry, at present prices, will evidently command a market, but other descriptions are so dull and the outlook so uncertain that buyers are afraid to take hold; hence (as regards the lower grades) timidity and weakness on the part of both buyer and seller. Stocks of this class of Iron appear to be quite large, and as there is not likely to be any great demand during the next month or six weeks, there is little room to expect anything but a dull market, with more or less weakness in prices.

P. S.—In consequence of the increasing sale of Southern Irons, we base all quotations on Philadelphia deliveries. With some freights at $1 and others @ $2 @ $3 ℔ ton, it is impossible to quote the market intelligently unless by making uniform deliveries.

Bessemer Pig.—No business has been done during the week, although for some deliveries sellers could be found at $21. Buyers are not in immediate need of supplies, however, and as they find the market for their product very weak, they are disposed to hold off on a chance of lower prices. Domestic Bessemer is in larger supply than formerly, and as prices are low, it is difficult to make any headway with foreign at over $20 @ $20.50. At the same time we are cognizant of orders being out at $21 for 1000-ton lots, which, in all probability, will be accepted.

Spiegeleisen.—No sales during the past week, although sellers are somewhat anxious for business. Latest transactions were as follows: $25.50 for 10 to 12 %; $31 for 20 %, and $47 for 45 %.

Muck Bars.—The demand has been fair, and sales during the week amount to about 3000 tons, all told. Prices vary according to quality, $34 @ $34.50 at mill being the usual price for first-class quality, but sales in some cases have been made as low as $33.50. Market a little heavy.

Blooms.—Market exceedingly quiet, and sales in quantity difficult to make at any price. Prices are almost nominal, as follows: Charcoal Blooms, $57.50 @ $60; Run-out Anthracite, $48 @ $50; Scrap Blooms, $42.50 @ $45; Northern Ore Blooms, $40 @ $42.50.

Bar Iron.—The market is in a fair condition, and, on the whole, probably as good, if not better, than it has been within the past month or six weeks. The demand is of a more general character, and while the lots called for have not been large, there has been sufficient of them to keep the mills actively employed. This may have been in anticipation of a lessened output during the coming month, and to secure stock to meet contingencies. Prices are about steady, but there is a wide difference in quotations, according to quantity, specification in sizes and requirements as to quality. As a rule, 2.2¢ @ 2.25¢ is quoted for small lots best Refined Iron, but we hear of business being taken at 2.1¢ @ 2.15¢, when the order was specially desirable. Common Iron is nominal at 1.8¢ @ 1.9¢, but there is no demand of importance. Skelp Iron is very quiet, and no sales have been heard of within the past ten days. Grooved is nominal at about 2.15¢ @ 2.2¢, delivered, and Sheared at 2.3¢.

In this connection we have much pleasure in announcing the fact that the well-known firm of James Rowland & Co., of this city, who suspended in 1878, and to whom an extension of five years was granted, have within the past week paid principal and interest in full several days in advance of maturity. This news will doubtless be gratifying to the friends of the firm, and we are sure that it is both a pride and a pleasure to the members of the firm.

Plate and Tank Iron.—Without any specially heavy demand, the improved feeling noted in our recent reports seems to be maintained. The mills are all fairly supplied with orders, and as the output is likely to be very light during the next few weeks, there is not much urgency for new business. It is difficult to say what the ultimate outcome will be, as the fall trade is not considered altogether assured, but manufacturers are disposed to take their chances on the present basis of prices as being somewhere near bed-rock. Sales have been made at 2.3¢, delivered, for Ship Plate; 2.4¢ for Tank Iron; 3¢ @ 3.25¢ for Shell; 4¢ @ 4.25¢ for Flange, and 5.25¢ for Fire-Box.

Structural Iron.—There is not much of interest to report this week, although business is in fair condition. New business to the extent of 800 to 1000 tons has been entered, and a considerable amount is in sight for distribution within the next six or eight weeks; hence the feeling of confidence as regards the fall trade. Prices are steady at last quoted, viz: Angles, 2.3¢ @ 2.4¢; Tees, 2.3¢, and Beams and Channels, 3.5¢.

Sheet Iron.—The demand has improved considerably, and prices may now be called steady to firm. Buyers of large lots can still obtain concessions, but the feeling is stronger, and the general tendency is in the direction of higher prices. Small lots are quoted as before, viz:

Common Sheets, No. 28	4½¢
Common Sheets, Nos. 26 and 27	4¼¢
Common Sheets, No. 21 to 25	4 ¢
Common Sheets, No. 18 to 20	3¾¢
Best Refined, ¼ % advance on the above.	
Best Bloom Sheets, No. 26 to 28	6¾¢
Best Bloom Sheets, No. 22 to 25	6½¢
Best Bloom Sheets, No. 16 to 21	6¾¢
Common Red Plates, 3-16 to 16	3.2¢
Best Bloom. Galvanized, discount	40 %
Second quality, discount	50 %

Wrought Iron Pipe.—Demand continues light, and there appears to be little chance of any immediate improvement. It is said that this branch of business has not been so depressed for a long time. Prices are weak and unchanged, as follows, for ordinary lots: 57½ % @ 60 % off list price on Boiler Tubes, and 70 % off on Gas and Steam Pipe, while on special sizes further discounts of more or less importance could be had.

Steel Rails.—There is rather more demand, but prices are easier, and $38 has been shaded for a lot of about 10,000 tons. A similar order is on the market, which the buyer expects to place at $37, if not less, sellers having offered a liberal concession on $38, their first asking price. Small lots for summer delivery command $38 @ $39, but such orders as the above can be placed at $37.50 @ $38, and for deliveries in the late summer it is not unlikely that still better terms could be had. The mills are very full of work for the next three months, but there is not much coming in for fall and winter; hence the desire to secure such orders as may be offered, even though it may crowd them a little during the summer months.

Steel Crop Ends.—There is not much doing in this article, although $23.50 is bid for 500 tons. Holders appear to have confidence in higher prices in course of next month, and are therefore firm at $24, at which price there are sellers.

Old Rails.—Market rather quiet, although buyers can be found at reduced quotations. A 500-ton lot Bull Heads for shipment to Philadelphia was sold a few days ago at $23, and $21.75 is bid for Tees, and $25.50 for Double Heads.

Scrap Iron.—Market exceedingly dull, and sales hard to make at quotations recently current. Cargo lots are offered at $23, but buyers appear to have withdrawn from the market, and prices look like going still lower.

Nails.—Current demand appears to be somewhat ahead of production, and prices are held with more firmness than has been the case for some time past. Small lots command about $3.10 ℔ keg, and even on larger orders $3 appears to be about the lowest selling price.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, PA., June 26, 1883.

There has been no important change in the general Iron situation during the past week. The apprehension occasioned by the embarassment of Graff, Bennett & Co. has pretty well subsided. With here and there an exception, the Iron trade of the West is in good condition financially, and we can see no reason for the apprehension of those who predict another panic in the trade. The trouble, of course, is overproduction, but the cure for this is being applied with a good deal of vigor; furnaces are blowing out and mills stopping in all directions, and the indications are that by the first of September the general situation will be much improved. Consumption within that time will no doubt be considerably increased, while stocks will be kept down, and there is no reason apparent at present why there should not be a good fall trade. The crop reports are growing more encouraging as the season advances. It is admitted on all hands that the present will be a year of low prices; that profits, under the influence of an active competition, will, of necessity, be small; but, as already stated, there are no grounds for apprehending anything like a panic.

Ores.—The position of the market remains unchanged. Business continues very unsatisfactory, and no improvement need be looked for at present. The reports from the Lake Ore region are of a most discouraging character.

Pig Iron.—The dullness noted from week to week for some time past continues, and there is very little prospect of any immediate change for the better. Fully one-half of the furnaces in the Allegheny, Mahoning and Shenango Valleys have gone out of blast, and the number is to be increased between now and the 1st of July. This being the case, it is evident that production in Western Pennsylvania and Eastern Ohio will be very much reduced during the rest of the summer, and this is about the only bright spot apparent at the present time. The indications are that the consumption will continue light during July and August, but an increased business is looked for in September, and it may start up before. Some of the Marshall Iron is still on the market, and no doubt will be until it is all disposed of. We repeat former quotations:

No. 1 Foundry	$20.00 @ 21.00,	4 mos.
No. 2 "	19 00 @ 19.50,	4 "
Neutral Mill	17.50 @ 18 00,	4 "
Red-Short Mill	18.50 @ 19 00,	4 "
Warm-Blast Charcoal	25.00 @ 26.00,	4 "
Cold-Blast Charcoal	23.00 @ 33.00,	4 "
Bessemer Iron	21.00 @ 21.50,	4 "

We can report a sale of 500 tons Warm-blast Charcoal at $25, 4 mos., and some small lots of Bessemer at $21.50; a round lot of the latter could no doubt be had considerably below the prices quoted.

Muck Bar.—The offerings are light, but there does not appear to be much inquiry. In the absence of sales we repeat former quotations, $34 @ $34.50, cash at mill.

Manufactured Iron.—We have to report a continued dull market, and prices are weak and irregular. There is a good deal of competition for desirable orders, which are not very plenty, and for these we hear very low rates. Manufacturers still quote on a basis of 1.9¢ @ 2¢, but we hear of sales as low as 1.8¢. Some of the mills are now idle, and it is given out that the number will be considerably increased next month.

Nails.—At a meeting of the Nail Association the other day, a suspension of the factories for three or four weeks was talked of, although no definite action was taken. If business, however, should fall off, there is no doubt that a stoppage will be ordered, as it is determined to prevent the market from being overstocked. Prices are steady as quoted in our last report—$3, 60 days, 2 % off for cash, with an abatement of 10¢ ℔ keg on carload lots and upward.

Wrought Iron Pipe.—There has been but little change in the position of the market since our last report; demand continues light, while prices remain unchanged. Discounts on Gas and Steam Pipe, 70 and 5 % @ 70 and 10 %; on Boiler Tubes, 55 @ 55 and 5 %; Oil Well Casing, 48¢ @ 50¢ per foot, ; do. Tubing, 15¢ @ 17¢, net.

Steel.—The Merchant Steel trade continues dull, unusually so for this season of the year; none of the mills are working up to anything like their full capacity, and the indications are that the ordinary stoppage next month for stock-taking and repairs will be extended beyond the usual time. As in the case of Iron, with an active competition for orders, prices are being cut a good deal.

Steel Rails.—The mills here are not in condition to make additional contracts for near-by delivery, being sold several months ahead. Prices for Heavy Sections are still quoted at $38.50 @ $39, cash at mill; so far as we know, there have been no sales here below our inside quotation.

Old Rails.—The market has stiffened up considerably, but in the absence of sales it is difficult to give reliable quotations. Consumers appear to be pretty well supplied, one of the largest having 14,000 tons on hand and bought to arrive.

Railway Track Supplies.—A fair business reported, with no change in prices. Spikes, 2.6¢, 30 days; Splice Bars, 2¢; Track Bolts, 3¢ with Square and 3.2¢ @ 3.25¢ with Hexagon Nuts.

Scrap.—The Scrap trade is almost dead, not enough doing to establish prices. Wrought Scrap is nominal at $22 @ $23, net ton, for Ordinary, and $24 for Selected Railway; Old Car Axles, $32 @ $33; Wrought Turnings, $15 @ $17; Old Car Wheels, very dull—nominal at $20 @ $21, gross; Crop Ends.—There has not been a sale reported for several weeks, in the absence of which we quote nominally at $25, gross.

Coke.—There is no improvement to note, and not likely to be very soon; prices are still quoted same as a week ago, 87½¢ @ 90¢ ℔ ton, delivered free on cars at ovens. It is stated that about one-fourth of the whole number of ovens in the Connellsville region have gone out, and that the number will be considerably increased within the next few weeks.

Window Glass.—Discounts remain unchanged at 70 % on Single and 70 and 10 % on Double Strength. The factories will shut down at the close of this month and remain so until September.

CHICAGO.

Office of *The Iron Age*, 36 and 38 Clark St., CHICAGO, June 25, 1883.

Hardware.—A fair trade is doing in Shelf and Heavy Hardware, and quotations generally remain unchanged.

Nails.—The demand for Nails continues good at $3.25 per keg for 10d. to 60d. in small lots, with an additional 10¢ off for carload lots, with the usual discount off for cash.

Pig Iron.—We have no material change to note as having occurred during the week past in the Pig Iron market. Demand good at present quotations: Lake Superior, Nos. 1 and 2, $23; No. 3, $24, and Nos. 4, 5 and 6, $25, 4 mos.; Briar Hill, $25; Himrod, $23; Crane No. 1, $25; No. 2, $24; Thomas, $24 @ $26; American Scotch, $24 @ $25; Du Val, No. 1, $23.50; No. 2, $22.50; Fulton Notch, No. 2, $22.50; No. 3, $21.50; Calumet, $23 @ $23.50, 4 mos.; Imported Scotch, $27 @ $28; Southern Coke, No. 1, $23.35; No. 2, $22.35; Low Moor, No. 1, $24; No. 2, $22.75, 4 mos. Silvery Soft, $21 @ $22.

Manufactured Iron.—The Merchant Iron trade during the week past has been fair, without any change in quotations to be noted. We quote Bar, 2.20¢ @ 2.30¢ rates; Angle Iron, 3¢ @ 3.20¢ rates; T Iron, 4¢ rates; Beams, 3.80¢; Channels, 3¢; Nos. 10 to 14 gauge, 3.20¢ rates; Nos. 15 to 17 do., 3.50¢; Nos. 18 to 21 do., 3.80¢; Nos. 22 to 24 do., 4¢; Nos. 25 and 26 do., 5¢; No. 27, 5.20¢, and No. 28, 5.60¢. These quotations would be shaded on large lots from 1-10th to 2-10ths cent per pound. Norway Original Bars, 4½¢ rates; Norway Rerolled Bars, 5½¢ rates; Ulster, 4½¢ rates; Low Moor Iron, 8¢ rates; Nuts and Washers, 8¢ off list; Wrought Boat Spikes, 3¢ rates.

Steel.—The Tool, Machinery and Agricultural Steel market continues without change, but with a dull tendency, while quotations remain as follows: Tool, 11½¢; Machinery O. H., 5¢; Crucible Machinery, 7¢; Hammer, 2 inches and under, 8¢; over 2 inches, 9¢; Cast Spring, 6¢, and O. H. Spring, Tire and Sleigh Shoe, 5¢; Sheet, first, second and third quality, 12¢, 10½¢ and 8½¢ respectively; Crucible Plow, 6¢; Eagle Plow, 5¢; Iron Center Plow, 9¾¢, and Soft Steel Center Plow, 9¾¢; Cast Plow, 5¢; German Plow, 4½¢.

Scrap Iron.—The market is decidedly dull, there being very little inquiry for Scrap of any kind. We quote as follows, which are dealers' purchasing prices: No. 1 Country Wrought Scrap, ℔ net ton, $17; No. 1 Cast Scrap, ℔ ton, $15; No. 1 Stove Plate Scrap, ℔ ton, $10; Machine Shop Wrought Turnings, ℔ ton, $9; Cast Iron Borings, $7; Old Plows and Plow Steel, $11; Malleable Scrap, $5.

EVERETT & POST, 156 Lake street, Chicago, report to us as follows, under date of June 23, 1883: *Connellsville Foundry Coke.*—The past week has developed nothing new in Coke. Prices for Connellsville Foundry Coke are unchanged. There is a good demand, consequent upon shutting down of so many ovens owned by smaller operators. The large producers are behind on their orders. *Pig Lead.*—This article has shown more firmness during the week. Sales have been made of 500 tons Common and Refined at $4.15 and $4.17½, and 100 tons Refined at $4.20. There is a very fair demand noticeable. The market closes firm at $4.15 to $4.17½ and $4.20, according to brand and delivery.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., CHATTANOOGA, June 25, 1883.

The summer heat continues, and business partakes of the general languor. General trade is very fair for the season, and merchants make no special complaint of slow collections. In heavy articles, outside the building trades, there is very little interest. The closing or slowing down of many Iron concerns in Chattanooga is not very seriously felt, as the hands, or most of them, find employment readily in the great number of wood-working and other manufactories that have sprung up since 1879. Crop reports in the South favor an average production in all lines.

Pig Iron.—There is nothing of interest to report. Sales of large lots are rare, and when they occur concessions are necessary. Several of the Coke furnaces now in will go out during the summer. We continue to quote No. 1 Foundry, $19 @ $20; No. 2 Foundry, $18 @ $19; Gray Forge, $16 @ $19; White and Mottled, $14 @ $15; Car-wheel Metal, $24 @ $26.

Ores.—We quote 50 % Brown Hematite, ℔ ton, $2 @ $2.75; Red Fossil, $2 @ $2.25, delivered at furnace.

Miscellaneous Articles.—Old Rails are in full supply at $22, and rather dull. Wrought Scrap, $18 @ $22; Cast Scrap, $11 @ $14; Old Wheels, nominal, $22.

Nails—Are fairly strong at $3 for large bills, and 10¢ @ 15¢ higher for small lots.

Manufactured Iron.—Bar is dull at $2 for round lots, assorted sizes; Railroad Spikes, $2.70; Track Bolts, $3.20; Fish Plate, $2.

Coal.—We quote Fancy Lump, $3; Common, $2.50; run of mine to manufacturers, $1.75 at mills.

Coke.—We quote Furnace Coke, $3 at point of consumption; Foundry, 10¢ @ 12¢ ℔ bushel.

LOUISVILLE.

GEO. H. HULL & Co., Commission Merchants, report to us as follows, under date of June 23, 1883: The demand for Hot-blast Foundry Irons is very much improved. Prices are firm, and considerable sales are being made. Car-wheel Irons are dull. We quote, for cash, in round lots, as below:

FOUNDRY IRON.

No. 1 Hanging Rock Charcoal	$25.00 @ 26.00
No. 1 Southern Charcoal	21.50 @ 22.00
No. 1 Hanging Rock Stonecoal and Coke	20.50 @ 21.00
No. 1 Southern Stonecoal and Coke	20.50 @ 21.00
No. 2 " "	19.00 @ 19.50
" American Scotch "	19.00 @ 20.00
Open Silver-gray	18.00 @ 19.00
Close "	17.00 @ 18.00

MILL IRONS.

No. 1 Charcoal	20.00 @ 20.50
No. 1 Stonecoal and Coke, Neutral	18.00 @ 18.50
No. 2 " "	17.00 @ 17.50
No. 1 " Cold-short	17.50 @ 18.00
No. 2 " "	16.50 @ 17.00
White and Mottled, Cold-short and Neutral	15.50 @ 16.00

CAR WHEEL IRONS.

Hanging Rock, Cold-blast	32.00 @ 35.00
" " Warm-blast	25.00 @ 27.00
Alabama and Georgia, Warm and Cold-blast	27.00 @ 28.00
Central Kentucky, Cold-blast	25.00 @ 28.00

W. B. BELKNAP & Co., Iron and Steel Merchants, Nos. 115 to 121 West Main street, report to us as follows, under date of June 23, 1883: Trade the past week has been quiet, but not more so than is usual at this season. There has been little, if any, change in prices, but there is, perhaps, manifested a lower tendency in most lines of goods. There seems to be a general disposition to wait for something to turn up.

CINCINNATI.

JUNE 25.—*Pig Iron.*—The market remains much in the same condition as reported last week. The reports of the market in some of the local papers last week is thought to be a coinage of the imagination, as no facts can be found to support them. The larger consumers of Foundry and Mill Irons report offers of large and small lots at prices that have not found their way into the quotations, but they are generally of low grades. Prices at which best grades have been taken will be found in the following quotations: Best Hanging Rock C. C. Foundry, $25; Good, $24 @ $24.50; Southern, $21 @ $22.50; No. 2, $1 less. Best Hanging Rock Coke, $22; Good, $21; Southern, $20; No. 2, 50¢ @ $1 less. Best No. 1 American Scotch, $22; Good, $21; No. 2, $1 less. Silver Gray Softeners—Best, $20.50; Good, $20; No. 2, $19 @ $19.50; No. 3, $18 @ $18.50. Forge, $17 @ $22 for range of Stonecoal, Coke and C. C.

ST. LOUIS.

HOFFER & Co., Pig Iron and Iron Ore Merchants, 214 Pine street, report to us as follows, under date of June 23, 1883: Business is still very dull, and prices remain about the same as last reported. We quote:

HOT BLAST CHARCOAL IRONS.

Missouri	$20.00 @ 20.50
Southern	20.00 @ 21.00
Ohio	25.00 @ 26.00

COAL AND COKE IRONS.

Missouri	20.00 @ 20.50
Southern	18.50 @ 20.00
Ohio	20.00 @ 25.00

MILL IRONS.

Red Short	18.50 @ 20.00
Neutral	17.00 @ 18.00

CAR WHEEL AND MALLEABLE IRONS.

Missouri	21.00 @ 22.00
Southern	25.00 @ 28.00
Ohio	23.00 @ 32.00

BALTIMORE.

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of June 25, 1883: There has been doing, for the past week, a moderately fair business, at close and shaded figures, as per annexed quotations:

Ref. Bar Iron, 1 to 6 x ⅜ to 1	℔	2¼ @ 2.35¢
" " 1 to 4½ x 1⅛ to 1	℔	2¼ @ 2.35¢
" " ¾ to 2, Round and Square	℔	2¼ @ 2.35¢
Hoop Iron, 1½ wide and upward	"	3 7-10 @ 3 3-20¢
Band Iron, from 1½ to 6 in. wide	"	2 7-10 @ 2 8-10¢
Horse-shoe Iron	"	3¼ @ 3¾¢
Norway Nail Rods	"	5¼ @ 5½¢
Black Diamond Cast Steel	"	11 @ 12 ¢
Machinery Steel	"	4½ @ 5 ¢
Spring Steel	"	4 @ 4½¢
Common Horse Nails	"	10 @ 11 ¢
Railroad Spikes, 5½ x 9-16	"	2 6-10 @ 2 7-10¢
Perkins' Horse Shoes, ℔ keg of 100 ℔		$4.37½
" Mule Shoes		5.37½

RICHMOND.

ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows, under date of June 25, 1883: Choice No. 1 Foundry Pig Iron has been advanced $1 per ton. Many consumers are laying in supplies for balance of the year. We quote as below:

No. 1 Scotch Pig Iron	$23.00 @ 26.50
No. 1 Anthracite Pig Iron	21.00 @ 23.50
No. 2 " "	20.00 @ 22.00
No. 1 Virginia Coke Pig Iron	20.00 @ 22.50
No. 2 " "	19.00 @ 21.00
No. 3 " "	18.00 @ 19.00
White and Mottled	16.00 @ 17.00
Virginia C. B. Ch rcoal	26.00 @ 28.00
Old Dom. Nails (carlo d lots)	3.00 @ ....
" Refined Bar Iron (base)	2 2-10¢
Old Iron Rails	21.00 @ 22.00
Wrought Scrap, No. 1	20.00 @ 21.00
Cast Scrap, No. 1	16.00 @ 18.00
Horse Shoes (Tredegar)	4.25 @ ....
Mule " "	5.25 @ ....

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From Our Regular Correspondent.*)

LONDON, ENG., June 11, 1883.

THE IRON MARKET

has again been remarkably quiet since my last report, the only features worthy of special comment being those to be presently alluded to. In some quarters there is a vague impression that we have already passed the lowest level of prices, and that we may now regard it as tolerably certain that we are on the eve of better things. It is confessedly very difficult to support an opinion of this kind and on this subject at any time, but in the present state of affairs it is exceptionally hard to arrive at an accurate conclusion. So far as can be seen, however, there are but vague and shadowy grounds for assuming that the iron market is about to gain in strength, while, on the other hand, there are many reasons for taking the opposite view. It is possible that orders are being held back by merchants and consumers, and it may be that we shall presently receive some valuable orders from the United States, but the probabilities all run strongly in the other direction, and, without wishing to be unduly pessimistic, it is only the commonest prudence to take a sober view of the situation. The Board of Trade returns for May show that we are still doing a large export trade, but they also plainly illustrate the shrinkage of values, as well as the decreasing buying on behalf of the American market. Our current advices from the Continent of Europe and the principal Colonies also lend support to the idea that optimism is a little out of place just now, while the condition of the home market certainly excites no sanguine hopes of its early recuperative powers. On the whole, consequently, it seems reasonable to anticipate a continuance of the present quietude, with little or no diminution of competition, and a prolongation of the era of low selling values. Changes now unexpected may come about, but until they make themselves forcibly apparent, the foregoing inference may be considered to hold good.

At Glasgow warrants have been weak, in spite of some speculative operations, and are lower on the week. In some of the higher grades of Scotch makers' brands there has been a considerable reduction of prices, after a period during which the margin between these figures and the quotations for warrants has been unduly wide. The local consumption being good, and shipments on a favorable scale, it is inferred that the reductions just referred to are the outcome either of enlarged stocks in makers' own yards, or of the more vigorous competition of Middlesboro' pigs in Scotland—possibly of both causes combined. The Cleveland market has again been very dull, albeit the ironmasters' returns have shown enlarged shipments during May. The reduction of reserve stocks by 3000 tons only, however, has checked any tendency in the direction of higher values, the heavier shipments having been insufficient to carry off more than about the present output. Quotations, therefore, are virtually unaltered, on the basis of 39/6 @ 39/9 for No. 3, with odd sales at 39/ @ 39/3 ℔ ton. The strike at Bolckow, Vaughan & Co.'s works still weighs on the market, but it is to be hoped that an amicable arrangement will be speedily arrived at. Hematite pig irons are sluggish, but mixed parcels of Nos. 1, 2 and 3, in usual proportions, are 50/ @ 51/ ℔ ton, as heretofore. The make on the West Coast is being fractionally reduced, but is still over 30,000 tons weekly, besides the production of the 8 furnaces in Scotland, 35 in Cleveland and 8 or 9 elsewhere, running on the same kind of iron. The aggregate output of these pigs in the United Kingdom probably reaches over 60,000 tons weekly, and it is pretty certain that the market is not absorbing anything like that large quantity. All the ordinary classes of crude iron are nominal at about late rates, and are slow of sale in the open market, although they are being freely delivered on contracts negotiated some time ago. As regards heavy manufactured iron, there is no change to note, but prospects are good, especially for the armor-plate mills. The producers of ship and

boiler plates are also well sold forward. Fencing wire is sluggish, and there is no movement of importance in galvanized iron. Ordinary merchant iron is quite without change, Staffordshire marked bars being nominal at £7. 10/; medium, £6. 10/ @ £7; ordinary, £6. 10/ @ £6. 5/, and common Welsh, £5. 7/6 ₱ ton. In sheets there is rather more employment offering, but the mills are still insufficiently engaged. Hoops and tube strip are in steady demand. In the tube trade itself, it may be hinted, events of considerable importance are impending, and will become known in the course of a very short time. In iron rails there is no new business, except for very light sections at special rates. For old rails the demand is mostly for home consumption, D. H. being quoted at 67/ @ 68/ ₱ ton, f.o.b London, in answer to export inquiries. Heavy wrought scrap iron is in rather better request, but prices are a little easier, and some large sales are reported at 56/6 @ 57/ ₱ ton, f.o.b. London, in respect of No. 1 assortments. These sales are stated to be on United States account. It is not clear whether these sales are to be taken as indications of further transactions of the same nature, nor is it certain that there are other than very moderate stocks of picked material of this kind. In cast scrap no change is to be noted.

Steel is in moderate request at Sheffield, the poverty of the new demand from the United States being to some extent compensated for by the steady requirements of France, Russia and certain of the Colonies. The chief consumers, however, are the home shipbuilding, engineering, tool and cutlery houses, who continue to work up a large aggregate tonnage of good crucible qualities. The Bessemer concerns are still busy on rolled sorts, and there is a well-sustained call for Siemens plates, sheets and billets for wire-drawing uses. Bessemer blooms are neglected for export, and rail crop ends are nominal at 60/ ₱ ton, f.o.b. Wales, &c. In old railway leaf spring steel the current business is very limited. Steel rails are still quiet, but there has been no further retrogression in selling values, the majority of the mills being too well sold ahead to leave room for anxiety as to the near future. In many instances the entire output for 1883 is said to be under contract. The principal home lines have placed large orders for deliveries extending over this and next year, so that, all things considered, it is not probable that present rates (which we call £4. 12/6 @ £5 for ordinary heavy sections) will be lowered. An order for 10,000 tons 56-pound rails, with deliveries at New Orleans, is understood to have been booked by Ebbw Vale at £4. 12/6 ₱ ton, f.o.b. Newport.

SCOTCH PIG IRON

has been quiet throughout the week, and makers' brands have been lowered to a rather considerable extent, as will be seen below. Warrants have also been weaker, with a poor business doing. Shipments are maintained, nevertheless, and are now only 700 tons below those of 1882. There are 117 furnaces in blast in Scotland, against 108 a year ago. In Connal's stores there are 578,875 tons, against 637,277 tons this date 1882. Middlesboro' pig iron imports into Scotland are 12,636 tons over last year. William Colvin & Co., Glasgow, advise me: "The warrant market continued quiet last week, and on Thursday touched 46/6, cash, but rallied on Friday to 46/10. On Monday there was a good business done from 46/9½ to 46/8, cash. There has since been more animation in the market, and it has advanced from 46/8½ to 46/11½, cash, and closed with sellers at the latter price. In makers' iron there is a decided reduction in the quotations for the higher-priced brands. The Middlesboro' market remains in a depressed condition. No. 3 quoted 39/6." We quote:

	No. 1.	No. 3.
Gartsherrie, at Glasgow	57/6	53/6
Coltness, "	61/	54/
Langloan, "	61/6	54/
Summerlee, "	59/6	50/6
Chapelhall, "	57/6	53/6
Calder, "	59/	50/6
Carnbroe, "	54/6	49/
Clyde, "	50/6	48/6
Monkland, "	48/	46/
Quarter, "	47/6	44/6
Govan, at Broomielaw	48/	46/
Shotts, at Leith	61/	56/
Carron, at Grangemouth	50/	48/
" " specially selected	57/6	—
Kinneil, at Bo'ness		47/
Glengarnock, at Ardrossan	54/	47/6
Eglinton, "	47/6	45/9
Dalmellington, "	49/	48/

HEMATITE PIG IRON

is still remarkably quiet, with a fair consumption, it is true, but with an excess of production; nevertheless North of England pigs of this class, f.o.b. Cumberland ports, &c., are:

No. or quality.	Ordinary.	Bessemer.
No. 1	53/ @ 54/	52/
No. 2	52/6 @ 53/6	51/
No. 3	52/ @ 53/	50/
No. 4, Foundry	52/6 @ 53/	....
No. 4, Forge	52/6 @ 53/	....
Mottled	....	....
White	52/ @ 52/6	....

West Coast mixed brands are 50/ @ 51/, as of late, and makers' brands are as under:

	No. 1.	No. 2.	No. 3.
Cleator	54/	53/	52/
Lonsdale	52/	51/	50/
Workington	51/6	50/6	50/
Lowther	51/6	50/6	50/
Distington	51/6	50/6	50/
Harrington	51/6	50/6	50/
Solway	51/6	50/6	50/
Maryport	51/6	50/6	50/

FREIGHTS

to American ports are distinctly stiffening, and are in some cases rather difficult to obtain, owing to the want of suitable return cargoes for Europe. For pig iron from Glasgow to New York, by ordinary steamers, 7/6 in full is demanded for near futures, present sailings being completed. At Liverpool only a moderate amount is on offer, and special rates obtain, but 6/6 @ 7/ is asked for pig iron, and proportionately more for manufactured iron, steel and tin plates. Old rails and scrap from London to New York, &c., are 9/6 @ 12/, and crop ends from Wales, Barrow, &c, 7/6 @ 10/. Sailing freights for pig iron from Glasgow or Ardrossan are: Baltimore, offers; Buenos Ayes, 30/; Demerara, 30/; Melbourne, 20/; Montevideo, 30/; Montreal, 12/6; New Orleans, 15/ (from our East Coast, 9/); New York, 12/6; Philadelphia, 12/6 (from the East Coast, 10/); Portland, Me., 13/; Providence, R. I., 12/6; Quebec, offers; Rio, 20/; San Francisco, 20/; Sydney, 25/, and Valparaiso, 30/. With respect to freights from the Bristol Channel, Messrs. Edwards, Robertson & Co., of Cardiff, write me: "The list of exports of iron, &c., for the past month shows a very limited business to be doing from this Channel to the States. Freights have remained about the same as quoted in last month's circular, viz.: 12/ @ 12/6, New York; 11/6 @ 12/, Baltimore. Montreal is also quoted for full cargoes at 12/. There is no demand for room for the Southern ports. One steamer cargo has been shipped to Vera Cruz, and this will appear in our next month's circular." The exports from Bristol Channel ports include the following: To Montreal, 855 tons rails, 5981 boxes of tin plates, 4022 pigs lead, 3322 bundles fish plates, 227 bundles sheet iron and 14,959 bars of iron. To New York: 128,676 boxes of tin plates, 60 tons wire, 1357 tons crop ends, 600 ingots of tin, 50 casks oxide of iron and 250 tons Bath bricks. There were no exports to other United States ports during the month—a most unusual event.

CLEVELAND IRONMASTERS' RETURNS

for the month of May, just issued, show the following details, which will doubtless interest many of your readers:

MAKE OF PIG IRON.

	1883. May. Tons.	1883. April. Tons.	Increase. Tons.	Decrease. Tons.
Cleveland pig, port of Middlesboro'	126,629	124,119	2510	....
Cleveland pig, outside	31,594	27,916	3678	....
Clevelandpig, whole district	158,223	152,035	6188	....
Other kinds, including hematite, spiegel and basic pig iron, whole dis't	78,602	77,182	1420	....
Total of all kinds, whole district	230,825	229,217	7608	....
Furnaces on Cleveland pig iron at end of month, whole district	83	83	....	....
Furnaces on hematite, &c., at end of m'nth, whole dis't	35	37	....	2
Total	118	120	....	2

STOCKS OF PIG IRON.

	1883. May 31. Tons.	1883. April 30. Tons.	Increase. Tons.	Decrease. Tons.
Makers' stocks of Cleveland pig, p'rt of Middlesboro'	152,869	155,807	.....	2,938
Makers' stocks of Cleveland pig, outside of Middlesboro'	37,102	34,240	2,862	.....
Makers' stocks of Cleveland pig, whole district	189,971	190,047	.....	76
Makers' stores of Cleveland pig, whole district	15,748	16,883	.....	1,085
Pig iron in public stores:				
The N. E. R. Co.'s stores	4,495	4,625	.....	130
Connal's stores	77,593	79,441	.....	1,848
Total	287,807	290,946	.....	3,139

SHIPMENTS OF PIG IRON FROM PORT OF MIDDLESBORO'.

	1883. May. Tons.	1883. April. Tons.	1882. May. Tons.	Inc. on April, 1883. Tons.	Dec on Apr. 1883. Tons.
Shipments foreign	51,999	51,349	42,875	650	....
Shipments coastwise	35,787	36,701	28,530	....	914
Total	†87,786	*88,050	71,405	...	264

† Including 1778 tons of pig iron other than "Cleveland."

* Including 914 tons of pig iron other than "Cleveland."

THE BOARD OF TRADE RETURNS

for the month of May, just issued, show that the total value of the imports during the month was £36,257,443, against £35,935,954 in 1882 and £32,483,822 in 1881. For the five months of each year the figures are, respectively, £180,555,412, £175,046,193 and £167,947,754. The aggregate value of the month's exports was £19,499,565, as compared with £20,047,066 in May, 1882, and £19,087,648 in May, 1881. For the five months the totals are £96,931,963 in 1883, £98,160,280 in 1882 and £90,503,478 in 1881. The iron and steel shipped last month amounted to 374,579 tons, valued at £2,607,740, against 377,418 tons and £2,780,661 in May, 1882, and 356,664 tons and £2,456,366 in May, 1881. For the five months of this year the quantity is 1,591,873 tons, and the value £11,823,726, as against 1,716,629 tons and £12,643,924 in the same period of last year. The principal imports last month included:

May.	Quantities. 1882.	Quantities. 1883.	Values. 1882.	Values. 1883.
Copper ore, tons	6,491	10,961	£64,200	£93,050
Copper regulus, tons	3,736	5,849	138,039	184,254
Copper, unwrought and part wrought, tons	3,898	3,133	261,862	200,005
Iron ore, tons	317,502	311,131	280,038	272,579
Bar, angle, bolt and rod, tons	12,394	7,939	134,037	77,357
Iron manufactures, unenumer'd, cwts.	293,541	319,788	267,597	246,541
Steel, unwrought, tons	476	275	6,341	4,367
Lead, pig or sheet, tons	6,856	8,149	98,668	111,347
Pyrites, tons	51,534	58,060	110,564	131,871
Quicksilver, lbs	340,950	87,090	27,176	63,830
Elephants' teeth, &c. cwts	690	948	34,381	39,697
Tin in blocks, ingots, bars or slabs, cwts.	43,160	58,714	217,994	187,818
Zinc, crude, in casks, tons	3,488	3,626	57,498	56,726
Zinc, manufactures of, cwts	24,792	31,270	38,026	32,357

The chief items of export were:

Articles.	Quantities. 1882.	Quantities. 1883.	Values. 1882.	Values. 1883.
Firearms, No	14,635	18,758	£20,958	£23,381
Copper, unwt., cwts.	23,040	30,408	79,767	90,907
Copper wrt., cwts.	30,170	22,897	118,096	87,729
Mixed or yellow metal sheathing, cwts	41,437	36,473	127,651	108,514
Coal, &c., tons	1,860,749	2,672,470	843,426	651,420
Hdw and cutlery	.....	.....	343,125	331,242
Pig iron, tons	143,319	144,200	416,245	372,189
Bar, angle, &c., tons	24,934	29,866	180,668	214,024
Iron rails, tons	1,418	2,292	13,623	16,654
Steel rails, tons	60,025	69,949	444,551	398,162
Railroad, allsorts, t'ns	79,591	89,821	503,805	558,865
Wire (except tel. wire) galvanized or not, tons	6,565	5,517	111,145	82,632
Hoops, sheets, and boiler plts., tons	26,497	34,782	316,394	394,645
Tin plates, tons	22,812	25,506	397,740	410,049
Cast or wro't, tons	33,239	34,481	443,775	399,538
Old, for manufacture, tons	10,772	9,580	43,705	33,215
Steel, unwr'ght, tons	18,752	6,831	2.8,455	124,421
Man'factures of steel and iron, tons	1,687	828	79,229	39,160
Lead—Pig, rolled sheet, piping, and tubing, tons	4,107	4,182	69,610	69,251
Steam engines	.....	.....	314,212	430,102
Other descriptions of machinery and mill work	.....	.....	736,842	831,948
Plate and plated and gilt wares	.....	.....	29,048	23,405
Tel. wire and apparatus connected therewith	.....	.....	85,959	27,859
Tin (unwrt.), cwts	10,806	7,310	54,505	36,398
Zinc or spelter..cwts	13,852	17,450	10,108	12,773

TO THE UNITED STATES

the leading exports last month were:

Articles.	Month of May, 1883.	Month of May, 1882.	Month of Aprl, 1883.
Alkali, cwts	284,322	332,252	243,386
Hardware and cutlery, £	34,155	36,240	35,453
Iron—Pig, tons	22,187	40,495	23,247
Bar, angle, rod, &c., tons	587	1,422	1,487
Railroad, all, tons	7,737	11,946	4,518
Hoops, sheets, plates, &c., tons	3,043	1,535	2,638
Tin plates, tons	17,513	17,863	28,187
Cast or wrought, tons	704	842	717
Old, tons	6,179	6,848	8,228
Steel, unwrought, tons	3,321	13,831	3,891
Lead, all sorts, tons	4	1	10
Steam engines, £	4,549	9,117	4,300
Other machinery, &c, £	46,721	41,052	49,113
Tin, unwrought, cwts	257	948	661
Special return—Iron rails, tons	130	2,140	....
Steel rails, tons	7,182	9,517	4,342

THE AVERAGE VALUES

per ton paid for certain of the exports to the United States were:

	£	s.	d.		£	s.	d.
Pig iron	3	10	8	Tin plts., ₱ box	0	17	3
Iron rails	5	12	7¾	Scrap iron	3	11	0½
Steel rails	5	11	6	Unwrt. steel	13	16	11
Tin plates	17	4	8½				

Practical men will doubtless form their own conclusions from these averages.

FOREIGN.

FRANCE.

(*Moniteur des Interets Materiels*)

PARIS, June 20, 1883.—*Metals.*—Crop prospects still continue promising, and although general business still leaves much to be wished for, it can hardly fail soon to feel the favorable influence of a flourishing state of husbandry in France. Metals have been moderately active only, Copper and Spelter steady, the former even slightly better, but Tin and Lead lower. We quote to-day, in francs, ₱ 100 kg: *Copper.*—Chili Bars, 165 @ 168 25; Ingots and Slabs, 170.50; Best Selected, 176.25, and Pure Corocoro Ore, 170. *Tin.*—Banca, 261.75; Billiton, 256.25; Straits and Australian, 255, and English, 252.50. *Lead*, 31.25 @ 32.25, and *Spelter*, 40 @ 40.50. *Iron.*—The Iron situation here has most decidedly begun to improve; indications to that effect abound. On the one hand, there are the great railroad works, by agreement with the leading companies, to be carried out on the original Freycinet plan, and on the other, the contemplated construction of the metropolitan railway. Meanwhile, some big orders for railroad material have been received from various companies. On a firm market we quote to-day in this city: Merchant Iron, 18 @ 19; Charcoal Iron, 25; Flooring Iron, 18 @ 18.50; Sheets, 23.50 @ 26, and No. 18, 27 francs in bulk. At the North there is still a good deal of depression, so that the smaller works are in a rather critical position at the low prices obtained. Although change is very much to be hoped for in the district, and impatiently looked forward to. At Hautmont, one of the works has blown out its blast furnace and keeps only its rolling mill running. In the Ardennes there has been a dull week again, so that in that region the market has found no relief; consumers there confine themselves to the strictly necessary. Nothing of special interest has occurred in the Haute-Marne; prices remain steady. The Loire basin gets on rather poorly, so that several blast furnaces have had to be blown out during the week. There was a rumor that the Italian Government had ordered 120,000 guns to be made at St. Etienne, but, so far, we do not find it confirmed. *Coal.*—At the North and in the Pas-de-Calais a satisfactory trade is done at firm prices.

BELGIUM.

(*Moniteur Industriel.*)

BRUSSELS, June 11, 1883.—*Iron.*—The position of Iron still remains a difficult one in Belgium. In Luxembourg Pig Iron is held less firmly, too. We do not yet see from whence relief to our market is to come, except it be from the Colonies. A country we do a great deal of business with is Java, and from there and other Islands in Netherland India some inquiries have come during the week. Should these queries lead to anything, it might give us a lift precisely at a moment when we stand much in need of it; but the conditions, we are afraid, will be the reverse of brilliant. Rolling mills appear resolved to reduce their output considerably; hence there is a better feeling in some rolling-mill products. English Pig Iron is still quite weak, not bringing over 5.75 francs at Antwerp. This keeps down Belgian. At Charleroi Foundry Pig sells at 7.25 francs. In Luxembourg Pig Iron sells at 6 francs. Puddling Pig sells to a moderate extent only at 5.75 @ 5.80, and in some instances at 6. For Merchant Iron it is not an easy matter to get over 12.50; there is much competition between rolling mills. Sheets are not very firm; thus No. 2 may be had at 17 and No. 3 at 19; Commercial may be quoted 23 @ 25, and No. 4 remains steady at 27. Structural Iron works do a brisk business. The Steel works at length begin to perceive that too many of them have gone into existence in this country latterly, and they still multiply, so that a terrible amount of competition is growing up among them. Steel Rails sell for 15 francs the 100 kg., 29 kg. to the running meter; Steel Hoops at 23, and ditto Axles at 24. *Metals* have been in limited request; Ingot Copper at 170 francs ₱ 100 kg.; Banca Tin at 254; Billiton ditto at 251; Soft Pig Lead, 31, and Spelter, 38.25. *Coal* is in active demand at ensuing quotations; Domestic, ₱ ton, 13 @ 19; Gas Coal, 18 @ 20; Mixed, 12 @ 15; Small, 9 @ 11; ditto for Coke, 10 @ 11; Coke, 17 @ 18; Half-washed ditto, 19 @ 20.

GERMANY.

(*Borsenhalle.*)

HAMBURG, June 13, 1883.—*Iron.*—In consequence of the dissolution of the Siegen combination of makers quite a decline has been brought about in Pig Iron. Blast-furnace owners in Rhenish Westphalia are, however, resolved not to follow suit at a moment when greater animation in rolling-mill products holds out a prospect for better times to come all round. There is, indeed, quite a demand for Merchant Iron, and there is now not the slightest probability that prices of Finished Iron will rule lower in the near future. Sheets are wanted with great steadiness. In April there were 153 blast furnaces in operation in Germany, 72 of them making Puddling Pig, 16 Spiegel, 20 Bessemer, 11 Thomas and 34 Foundry Pig, turning out together 276,606 tons, against 284,136 in March and 241,890 in April, 1882. We quote, deliverable at Dusseldorf, ₱ ton, in marks: Spiegel, 64 @ 68; Prime White Pig, 57; Luxembourg, 44.60 @ 46; Charcoal, 80 @ 84; Foundry No. 1, 75; No. 2, 72, and No. 3, 62; Spanish "Mudela" at Ruhrort, 80 @ 82; English Bessemer at port of shipment, 50 @ 51; Spanish "Mudela" Bessemer, cost, freight and insurance at Rotterdam, 62 @ 63; German Bessemer, 59 @ 60; Common Merchant, 132; Prime, 152; Common Sheets, 190 @ 200; do. for Boilers, 205 @ 225; Thin do., 170 @ 180, and Rolled Wire for Wire Nails, 136 @ 140. *Coal* continues upward. *Metals* have, on the whole, been quiet, and ensuing rates capable of being shaded a little, according to circumstances; Lead weak: English Pig, 14.50 @ 15; do. Sheets, 15 @ 15.50; German Pig, 13.25 @ 13.50; Spanish, 16.50 @ 17; Tin sustained, English Refined at 107 @ 108, all other sorts, 105 @ 106; Copper easier: Drontheim, 71 @ 72; Lake, 80; Electrolytic, 77 @ 78, and Refined English Ingots, 71 @ 72. Spelter inactive at 15.25 @ 15.75 marks ₱ 50 kg., spot and to arrive.

HOLLAND.

(*Koch & Vlierboom.*)

ROTTERDAM, June 11, 1883.—*Tin.*—A considerable business has been transacted during the week in Billiton Tin in particular, at steadily drooping prices, closing at 56.75 spot, and 57 @ 57.25 to arrive, nominally, while Banca is neglected at 57.75 guilders ₱ 50 kg.

RUSSIA.

(*Journal de St. Petersbourg.*)

ST. PETERSBURG, June 9, 1883.—*Gold.*—Mr. Ibanoff publishes from official data statistics of Russian Gold production in 1882, from which it appears that the mines yielded an aggregate of 57,000,000 roubles, while the United States produced 60,000,000 roubles' worth, Australia 50,000,000 and other countries 25,000,000. Since the year 1877, the production of Gold in Russia has begun to assume extraordinary proportions; in that year the high taxes paid by private mines were abolished and the Government rented all its own mines to private parties, with the sole exception of the two belonging to the Imperial family in Nertschinsk and the Altai Mountains. The output now increases steadily from year to year. *Coal.*—Coal production also rapidly expands in the different Coal regions of Russia, especially the Don basin, near Moscow, and in the Kingdom of Poland. Thus the Don basin turned out last year 76,495,579 poods of 37 pounds; Poland, 66,250,652; Moscow, 26,590,270; the Ural, 4,085,668; the Kirghese Steppes, 1,040,152; Kounetsk, 385,290; Turkestan, 373,429; Kieff and Elizabeth Grad, 363,965, and other districts, 170,150.

AUSTRIA.

(*Austrian Trade Journal.*)

VIENNA, June 10, 1883.—*Iron.*—The general market has not varied much during the week. The demand for Merchant Iron has abated considerably, but the circumstance that many rolling mills still have a sufficient amount of orders on hand, prevents any material decline. Sheets are a little less in request, but they nevertheless remain well held. The transactions in Structural Iron are still large, though a little less so than previously. Pig Iron has undergone no change. The Government has purchased 2600 tons of Steel Rails for its lines for 121 florins ₱ ton, giving the order, equally divided, to three works. The Hungarian Government has resolved to replace 370 wooden railroad bridges by iron ones, five being large bridges, and is in treaty with the French Five-Lille Co., paying for the job in 25 annual payments. If carried out it will be the greatest single order ever given in railroad matters in Austro-Hungary to a foreign company. We quote to-day: White Pig, 51 @ 53 florins ₱ ton; Gray do., 54 @ 57; Bessemer, 57 @ 59; Merchant, Styrian, 130 @ 134; Bohemian, 115 @ 120; Sheets for blacksmiths, 180 @ 185; do. for roofing, 190 @ 195; do. for boilers, 175 @ 185, and do. for tanks, 170 @ 175; beams, 140 @ 145. *Metals.*—Copper for rolling purposes has been firmer. Tin has been irregular; a good deal of Old Tin appears in the market. Spelter has been improving, in response to the upward tendency in Prussian Silesia. In Lead a better demand has been noticeable at Breslau and Marseilles, but in other markets and our own there has been great apathy in the absence of a demand from dealers, and the markets, on the whole, have persevered in a drooping attitude.

EAST INDIES.

(*Schmidt, Kustermann & Co.*)

PENANG, May 5, 1883.—*Tin.*—During the fortnight the market opened at $30.05, but gradually gave way to $29.70. Only a moderate business has been done, not exceeding 5500 piculs taken by European firms and 1100 by Chinese, the market closing steady at $29.70. *Exchange*, 3/8¼d.

(*Gilfillan, Wood & Co.*)

SINGAPORE, May 10, 1883.—*Tin.*—Only 170 tons have been sold during the past ten days, at from $30.20 to $30.62½ ₱ picul, the market closing firm, with an upward tendency. Shipments last month from the Straits—575 tons to the United Kingdom and 500 tons to the United States—were rather larger than had been expected, but so far this month the supplies offering have been small, and this has strengthened dealers' hands. *Freights.*—Sailing tonnage is in small supply, and the next vessels put on the berth for the United Kingdom will command an advance on present nominal rates. The United States berths are well supplied, and rates are unchanged. For New York, the Norway, Victor and D. Dubrovacki continue loading at the rates quoted in our last report. For Boston, the Thomas A. Goddard loads on chartering account. The Agate took for Boston 2520 piculs Tin. *Exchange* is weak at 3/8¾d. for 6 months' credit drafts on London. There have been shipped from the Straits settlements to the United States during the first 4 months, 34,866 piculs, against 39,176 in 1882: 63,913 in 1881; 36,155 in 1880; 21,590 in 1879, and 18,511 in 1878.

(*Hessenauer & Co.*)

COLOMBO, May 14, 1883.—*Plumbago.*—The market has become quite weak at ensuing rates, in rupees, ₱ ton: Fine Lump, 145 @ 155; ordinary, 125 @ 135; Chips, 60 @ 70, and Dust, 40 @ 52. Shipments from October 1 to MAY 11: To the United Kingdom, 64,932 cwts.; to Trieste, 205; to Havre, 755; to India, 3011, and to the United States, 123,896; together, 182,099, against 133,594 in 1882, 114,042 in 1881 and 124,142 in 1880. *Exchange*, 6 months' credit bills, 2/7⅞.

CHILI.

(*Weber & Co.*)

VALPARAISO, April 30, 1883.—*Copper.*—In spite of the weakness cabled from Europe and heavy receipts, the market has been sustained at $18.50, 25,520 quintals selling thereat, including 6620 quintals Urmeneta, equal to £59. 10/ ₱ ton ₱ steamer, with 45/ freight. *Nitrate* has been most unfavorably influenced by European cable advices, and quite a decline has taken place, although the exchange favored sellers; yet the price is still considerably above European parity, which is due only to the enormous speculative purchases of a single firm here buying up all it could lay its hands on, for immediate shipment. Sales 268,000 quintals at $2.40 @ $2.42½, 95 %, equal to 1/2½ ₱ cwt., with 42/3 freight. Charters, 6000 tons for Europe, and 1200 for the United States. *Exchange*, 90 days' sight, 33¼d.

Artillery Experiments in Dahomey.—The San Francisco *Post* publishes the following interesting contribution to history: "The King of Dahomey received an invoice of Krupp cannon not long ago and conceived the idea of having them mounted on elephants' backs for use in the field. With much difficulty this project was carried out, and at the next military review the King ordered that one of the guns be fired immediately in front of the royal position, first taking the precaution to place a couple of thousand prisoners about where it was calculated the ball would strike, so as to judge of the effectiveness of the shot. When all was ready, one of the biggest elephants was backed round and sighted. Just as the lanyard was jerked, however, the animal turned half round to reach for a peanut or something, and the shell took off the Prime Minister's head and knocked a hole as big as a sewer though the royal palace. His Majesty wouldn't have cared so much if the matter had ended there—as the minister wasn't very prime and the palace needed ventilation—but it didn't. On the contrary, the elephant, which had been stood on his head by the recoil, picked itself up in a fury and started in on the down grade ahead of its ticket. It upset the grand stand the very first rush, slung the Grand Chamberlain and Past Grand Carver of Missionaries into the next street. It then jumped into the brass band with all four feet, and if it hadn't gotten the big drum over his head so that it couldn't see, would probably have cleaned out the entire congregation. The King was not found until the next morning, and then, as he slid down out of a banana tree, he was understood to remark that there was only one thing needed to render his new artillery system an entire success—that was to get the enemy to adopt it."

The Indicator on Railroads.

A prominent railroad journal, in speaking of the indicator, states that its value to railroads is much greater than it is usually credited with—assuming, of course, that it is in proper hands and intelligently used. It is claimed by some that a practical man can tell what is wrong with an engine without the aid of an indicator. As well might it be claimed that a country doctor, with no more knowledge of medical science than existed 100 years ago, can determine the nature of diseases as correctly as the best practitioners of the present time. A practical man, by laying off the points of admission, exhaust and compression, may form a valve path diagram, which, with plenty of assumption, may be accepted as an indication of the action of the steam in the cylinder, just as a physician may form a diagnosis of his patient from symptoms very different from what is revealed by a *post mortem*.

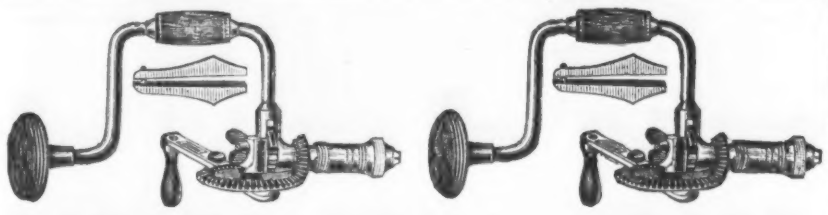
Not long ago a trial was made of two locomotive engines with the same cylinder, wheel and boiler dimensions, but with differently designed link and valve motions. The trial consisted in attaching to one of the engines a certain number of cars, weighing the coal, and running a certain distance. The same train was then attached to the other engine, the same distance was run, with the same engineer and on the same day, making the trip in the same time as nearly as possible, and running the engine in the same notch and with the same throttle. The result was that one engine burned 8 tons more coal than the other, the coal for both being taken from the same pile. All sorts of "practical" reasons were presented to account for the phenomenon, and all sorts of suggestions made in the way of remedies. The indicator, however, showed that one engine had 12 pounds more back-pressure than the other, a fact that nobody suspected until it was made known by the instrument. When the trouble was made manifest it was easy to select and apply the remedy. In order to secure the most economical results, steam must act in accordance with well-known laws, and the indicator furnishes a record of this action.

This point, we are aware, is questioned by some. But in both stationary and locomotive practice, when an expert engineer is called upon to determine why an engine misbehaves, or has too strong an affinity with the coal pile, he first of all seeks for the information afforded by the indicator, which is the corner-stone, so to speak, of all improvements in the economy of steam engineering. The trouble may be in the engine or boiler; the indicator at once determines whether it is in the engine, and saves a great deal of tinkering with the valve motion and petticoat pipe, instead of pulling out the flue sheets of the boiler and inserting new ones with a less number of flues.

Mexican Houses.

A correspondent of the London *Times*, writing from Mexico, says:

Springer, the capital of Colfax County, 716 miles from Kansas City, although surrounded by superior sandstone and some limestone rocks, at present consists of a few frame houses and some log shanties, interspersed with the true Mexican edifice, constructed of adobes, or bricks made of mud and water. The blocks, roughly cast in molds, are usually about four times the size of an English brick, and are sun-dried. In this almost rainless climate these dried-mud blocks are wonderfully durable; I have seen walls made of them 300 years ago still in good preservation. For the poorer class of Mexican dwelling, often about 16 x 12 feet, these adobes are usually placed singly, making a 10 to 12 inch wall, held together by a little mud mortar. At an elevation of 8 to 10 feet, fir poles or rough-sawn timber are laid from the front to the back walls, some of them projecting without any regard to uniformity, 2 or 3 feet, and proving useful supports for suspending a pig, tools, drying clothes, or even the baby in its basket. The walls are carried about a foot above the roof timbers, on which are generally tacked rough boards, covered with a grouting of several inches of mud and gravel, from which rain is run off by a few wooden spouts or merely by holes left in the wall immediately over the rafters. Many of the older adobes are without a window, and the doorway, without the superfluity of a frame, is sometimes closed, as required, by a buffalo hide or other curtain. A fireplace is not always provided, cooking often being done in a small beehive-like oven, placed outside. The internal arrangements of such a dwelling—thousands of which are met with throughout New and Old Mexico—are of the simplest description. In many of the poorer houses in remote localities the beds, if such they can be called, are of hides (laid on the clean-swept dirt floor), conveniently shaken and folded away when the occupants are astir. Many are still without either table or chair, for which a few rough stools are sometimes substituted.



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Many attempts have been made to imitate the outside appearance of our Patent Barber Improved Bit Brace, but no one dares to use our Patent Jaws, as seen in this cut, and no Brace is good without them.

We began to make these Drill Braces six months ago, but after a few thousand were put on the market we made an improvement which doubled their value. While shifting on to the improved kind, we ran out of stock, but hope in future to fill orders in a reasonable time.

We shall advertise these Drill Braces enough to make an inquiry in all Hardware Stores for them. If any dealer lays in a stock and finds that they will not sell, we will take them back at full price. But they will sell wherever shown.

We have never made a more popular tool. **Price, $36.00 per Dozen.**

Discount same as on Breast Drills. Send for Catalogue.

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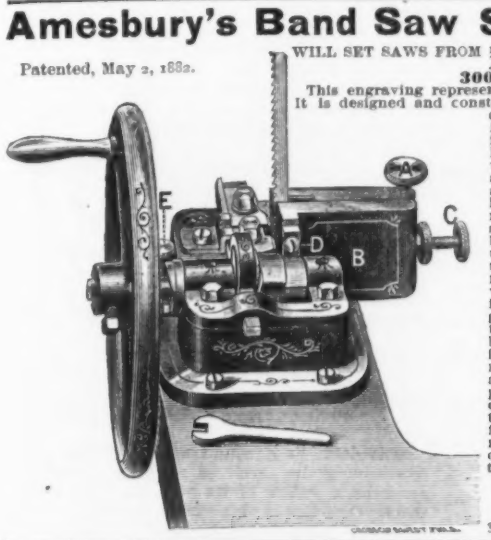

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This engraving represents our new Band Saw Setting Machine. It is designed and constructed upon entirely new principles, and embodies all the good features of hand-work in combination with the speed and regularity of machine work. The users of band saws have long felt the need of a machine that would hold a narrow saw in a rigid position and set the teeth without straining the blade; and in response to inquiries from many of our leading manufacturers, we have perfected a machine that will set the teeth on any band saw without in any manner affecting the blade. It is arranged to work by an easy, uniform crank motion, and when the tooth to be set is fed into position, the blade is firmly locked between the steel jaws of a vise, and remains immovable while the tooth is set to any degree required. As the crank goes forward, the blade is released, when the next tooth is fed up to the dies, the blade again locked in vise, and this tooth set in the opposite direction. All these movements are automatic, and can be carried on at a speed of 300 teeth per minute. The feeder picks up *only the tooth that is to be set*, consequently each tooth is fed to its proper position, *regardless of their irregularity*. No further expense is required outside of the machine, as the band saw is simply hung up over the machine on a wooden bracket, and the lower part left pendant near the floor.

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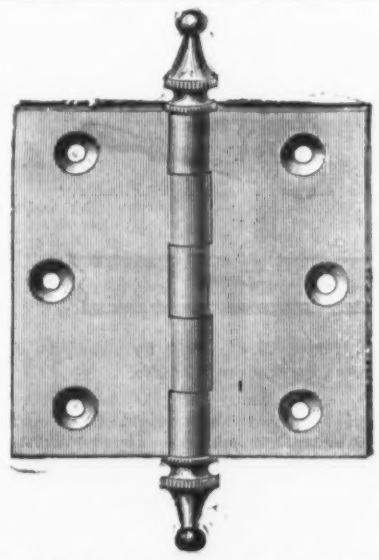

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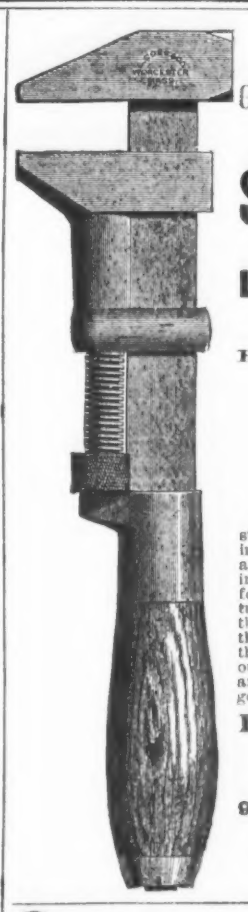

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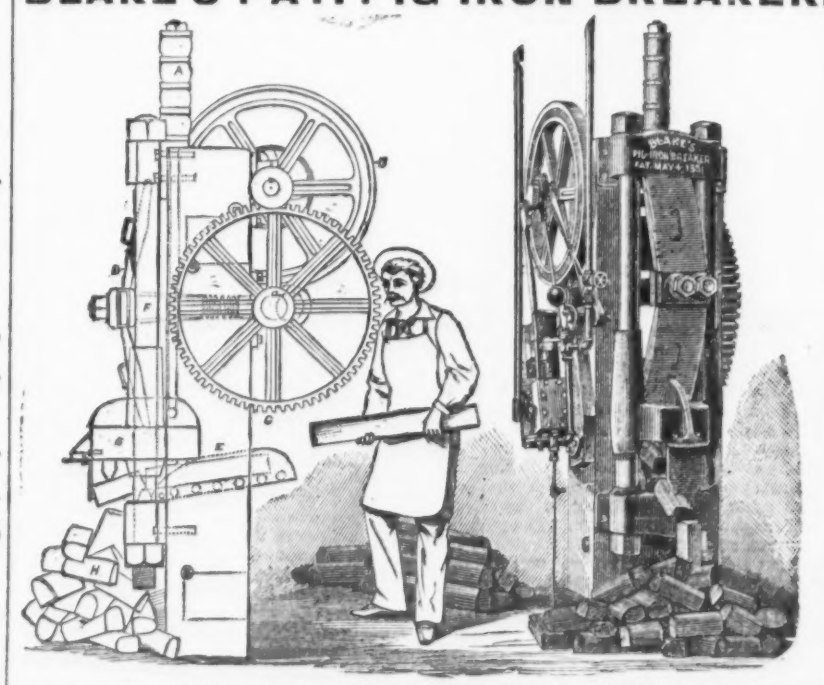

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LATEST LEGAL DECISIONS.

DAMAGES FOR BREACH OF CONTRACT.

In an action for the breach of a contract the defendant asked the court to charge: "That it being admitted that the plaintiff gave J a half-interest in the contract in question, he, the plaintiff, in no aspect of the case, should recover more than one-half of the difference between the contract price and the price at the time and place of delivery." This request was refused, and a verdict for the full damages rendered. A motion for a new trial was made in the case—Hadley *vs.* Sears—brought in the United States Circuit Court for the Southern District of New York, and it was denied. Judge Coxe, in the opinion, said: "In any view of the case, I am of the opinion that the plaintiff is entitled to recover the full amount. The legal title is in him, and payment of the judgment entered herein must discharge the defendant from every obligation under the contract."

DAMAGES FOR INFRINGEMENT OF PATENT.

A bill in equity was filed to recover damages for the infringement of a patent; there was no demand for an injunction. In this case—Burdell *vs.* Comstock—brought in the United States Circuit Court for the Southern District of Ohio, the defendant demurred to the jurisdiction of the court, and his demurrer was overruled. Judge Baxter, in the opinion, said: "The proper forum in which to sue for damages arising from an infringement of a patent only is a court of law. But chancery courts may take cognizance of such cases if they involve some element of equitable jurisdiction. The bill here filed is for damages and an injunction, but the patent had only five days to run. It is therefore manifest that the prayer for an injunction was a mere pretext—a device to transfer a plain jurisdiction to award damages from a court of law, to which it properly belongs, to a court of equity. We have no hesitation in declaring that, upon these facts, this court never had jurisdiction of the case. The overruling of the demurrer was not conclusive. Objections to the jurisdiction are usually taken in the first instance, but a plain defect of jurisdiction may be insisted upon at the hearing."

LIABILITY OF SURETIES.

The sureties of the keeper of the records of taxes of a county were sued by the purchaser of land at a tax sale for his loss of the property, which had been recovered from him in ejectment, the taxes having been paid and the record falsified. He recovered a judgment and an appeal was taken in the case—Perkins *vs.* Evans—to the Supreme Court of Iowa, where the judgment was affirmed. Judge Adams, in the opinion, said: "Because the plaintiff acted in this purchase through an agent, and therefore had no personal knowledge of the condition of the record, the defendants contend that he cannot recover. In our opinion their position cannot be maintained."

MASTER AND SERVANT—NEGLIGENCE IN MINING.

A laborer in a mine was killed by the falling upon him of some water-pipe which was being hoisted out of the mine. The person in charge of the mine and who conducted its operation was W; he was appointed by K, who was the first agent in station at the works, representing the owner, who lived in a far distant place. K was an accountant only, and, being altogether ignorant of mining, he in no way whatever assumed to direct or control W. The defense in this case—Ryan *vs.* Bagaley—was that the laborer and W were fellow-servants, and that as such they assumed the risk of each other's negligence. The plaintiff got a judgment, and the defendant appealed to the Supreme Court of Michigan, where the judgment was affirmed. The Chief Justice (Grave), in the opinion, said: "We must consider W under the evidence as the mining captain, intrusted with the management of the mine without direction or interference. He was not in any true sense a mere foreman or department leader or sub-chief in a given sphere of the mining operation. His agency covered the entire mine, and his capacity and direction dominated. In respect to legal accountability, his negligence was the negligence of the defendant. That he was put in control by the agent of the defendant does not relieve the defendant. In point of fact, he was in control."

SALE BY BROKER.

R, a lumber broker, wrote to C that he had sold a carload of shingles to H for his account, and asked him to forward the shingles directly to H, which was done. R had concealed from H that he was selling for another, and collected from him the purchase price, and H refusing to pay C, suit was brought—Crosby *vs.* Hill. The plaintiff recovered and the defendant appealed to the Supreme Court of Ohio, where the judgment was affirmed. Judge Doyle, in the opinion, said: "The broker has not possession of the goods, and therefore the purchaser cannot be deceived; and, besides, the employing of a person to sell goods as a broker does not authorize him to sell in his own name. If, therefore, he sells in his own name, he acts beyond the scope of his authority, and his principal is not bound. But it is said that by these means the broker would be enabled by his principal to deceive innocent persons. The answer, however, is obvious, that he cannot do so, unless the principal delivers over to him the possession and indicia of property."

BANKRUPTCY—SUBSEQUENT JUDGMENT.

A sued B for a debt, and six months later, and before the case could be tried, B was adjudicated a bankrupt. A year later A recovered a judgment, no stay having been got by B, and still a year later B got his discharge in bankruptcy. He then applied for a perpetual stay of proceedings on the judgment, on the ground that his discharge was a bar to its collection, but his application was denied, and in this case—Boynton *vs.* Ball—on error to the Supreme Court of Illinois, the action of the court below was affirmed. Judge Craig, in the opinion, said: "The question involved has led to much discussion among law writers, and although it has often arisen in the courts of England and the United States, the decisions are by no means harmonious. In Maine, Massachusetts and other States the discharge does not release the judgment, while in New York, Vermont and others it does. But we are satisfied the better doctrine, and that, too, established by the later decisions, is that a judgment rendered after an adjudication in bankruptcy creates a debt which cannot be proved against the bankrupt's estate; that the indebtedness existing prior to the recovery becomes merged in the judgment."

EXEMPTION FROM EXECUTION.

Certain property belonging to a firm, but which was exempt from execution as the property of the members of the firm, was seized in execution and sold, against the objections of the owners. In this case an action for the conversion of the property taken was brought against the sheriff—Waite *vs.* Mathews. The plaintiff was defeated below, and he carried the case to the Supreme Court of Michigan, where the judgment was reversed. Judge Campbell, in the opinion, said: "We can see no reason for the ruling as to the exempt property. Creditors have no right to exempt property, and the officer levying is bound to respect it in the case of partners as well as in other cases."

The Courts and the Railroads.

The St. Louis *Globe-Democrat* discusses recent decisions of the courts in railroad cases as follows:

The doctrine that railroads are common carriers, in the well-known legal meaning of the words, has been so often affirmed by the courts in recent years that it may fairly be considered settled. It follows that the power of the Government over these corporations is practically absolute, and that the courts will uphold and enforce any sort of reasonable legislation for the control of their business. Indeed, there is good reason to infer that even in the absence of specific legislation the courts would in certain instances feel bound to protect the citizen against partiality or extortion, for example, on the part of a railroad, by determining on general principles what rates should be charged. The duty of common carriers is, first of all, to give equal service on equal terms, and for reasonable pay, to all who may wish to patronize them, and this rule must carry with it all that is essential to its observance and enforcement, even where there is an absence of direct statutory remedy. Such is the present attitude of the Federal courts, broadly stated, concerning the relations between the railroads and the people, and it is not likely to be changed or modified.

It has taken a long time to reach this obviously sound and wholesome conclusion. The proverbial conservatism and slowness of the courts, together with the new and peculiar character of the railroad business, have operated to hinder and postpone any fixed adjustment of the matter. But now that a starting point has been agreed upon, so to speak, a fundamental theory established, the tendency seems to be toward a compassing of all the features of the problem. For instance, there are plain signs of late that the courts will not only exert their authority for the settlement of the relative rights of the railroads and the people, but will also interfere between different railroads and compel them to deal with one another on uniform and equitable terms. The most notable of recent decisions in this direction was rendered at Denver the other day by Judge Hallett, of the United States District Court, following a previous decision in the same general controversy by Circuit Judge McCrary. We refer to the case of the Denver and New Orleans Railroad Co. *vs.* the Atchison, Topeka and Santa Fé Railroad Co., relating exclusively to the business intercourse of these corporations with each other.

The history of this case presents, in substance, the following state of facts: The Denver and New Orleans and the Denver and Rio Grande have parallel lines of road from Denver to Pueblo, connecting at the latter place with the Atchison, Topeka and Santa Fé. A contract was made between the Denver and Rio Grande and the Atchison, Topeka and Sante Fé, whereby the latter agreed to do all its "through" business to Denver with the former at certain special rates. The Denver and New Orleans asked for the same kind of a contract as to rates on Denver business, which was refused. An action was then brought to compel the Atchison, Topeka and Santa Fé to exchange traffic with the Denver and New Orleans on the same terms accorded to the Denver and Rio Grande, and Judge McCrary decided in effect that it must be done, a degree being subsequently issued by Judge Hallett to that end. This decree, it appears, was evaded and disobeyed, and accordingly the Atchison, Topeka and Santa Fé Co. was brought again into court on a charge of contempt. The result was that fines were imposed to the amount of $400 for the acts complained of, and an order entered requiring restitution to be made to the Denver and New Orleans in such sum as a master in chancery shall find to be just and sufficient.

This application of the doctrine of common carriers is a necessary sequence of the decisions affirming the power of the courts to interpose, either by virtue of a statute or under the rules of common law, where the question affects only the transactions between a railroad and an individual. Otherwise, the railroad companies might, by combinations and preferences among themselves, defeat all attempts to promote the interests of commerce by the building of new roads, and, in a general way, make their own conditions and limitations. Such combinations, the Court says in the case we are considering, are nothing more nor less than "conspiracies" against the public welfare and convenience, and, therefore, illegal and void. Projects for the suppression of competition are declared to be as unauthorized and pernicious as schemes of discrimination and extortion, and as contrary to the spirit of the common-carrier principle. "It is not consistent with the public interest, or with common right," the Court goes on to assert, "that a railroad company should be permitted so to use its privileges"—that is to say, its common-carrier franchise—"as to secure to itself superior and exclusive advantages on other lines of transportation," or, oppositely, to give such superior and exclusive advantages to other companies on its own line. In short, a common carrier is bound to avoid every purpose or appearance of monopoly. It must not only perform service for individual patrons on equal and reasonable terms, but it must refrain from obstructing rival enterprises that look to a division of its own traffic and a possible diminution of its own rates of compensation. This particular case has yet to be passed upon by the Supreme Court of the United States, it is true, but the late utterances of that tribunal, and the general course of the Federal judges throughout the country on the railroad question, leave little chance for doubt that it will stand as already decided.

Small Power Drill.

The drill shown in the accompanying engraving, which is manufactured by Messrs. Champlin & Spencer, of 152 and 154 Lake street, Chicago, Ill., is designed to fill a want with many persons who are desirous of drilling holes from ⅛ inch down to smaller sizes, without being obliged to purchase high-priced larger and heavier machines. The pulleys of the drill afford three speeds, and are made of hardwood, as are also those on the countershaft. The diameter of the fast and loose pulleys on the countershaft is 5¼ inches, with face width of 1¾ inches. The diameter of the large driving pulley on countershaft is 9½ inches, with a face of 1½ inches. The distance between the end of the spindle and the table, when the same is lowered as far as possible, is 13 inches. The distance from standard of drill to center of table is 3½ inches. The extreme hight of machine is 26 inches. The diameter of

Small Power Drill, Built by Champlin & Spencer, Chicago.

table is 5 inches. The weight of drill and countershaft is 42 pounds. The spindle has a ½-inch hole for receiving drills. In belting, the machine requires 15 feet, ¾-inch twisted belting where it is used in a shop having a 12-foot ceiling. The table can be raised or lowered 2 inches by means of the lever. By the device on the back of the drill the table with lever attachment can be raised or lowered to suit the work being done, or it may be swung to one side entirely out of the way. The manufacturers offer this machine as well made in every part, and state that good material is used in its construction. It is so fitted as to run true, and is guaranteed to do satisfactory work. It is hardly necessary to point out in this connection where a small and cheap machine of this kind can be made extremely useful.

The Niagara Bridge of the Canada Southern Railroad.

The Canada Southern Railway bridge over Niagara River is to be built at a point about 300 feet above the present suspension bridge. The contractors have engaged, under a very heavy penalty, to complete the whole work by the 1st of December next, about eight months from the time of beginning operations. The time occupied in building the suspension bridge was three years. A comparison will give an idea of the vast progress made in recent years in the art of bridge building. The new structure will embody a new principle never before illustrated by any large work actually finished. Two similar bridges, however, are now being constructed—one the new Tay Bridge over the Firth of Forth, Scotland, and the second for the Canadian Pacific Railway over the Fraser River, British Columbia. Bridges built after the new design are known as the cantilever bridges. Each end is made up of a section extending from the shore nearly half way over the chasm. Each section is supported about its center by a strong tower. The outer arm having no support, and being subject, like the other, to the weight of trains, a counter advantage is given by the shore arm being anchored or weighted.

This style of bridge has been adopted so as to avoid the very great expense involved in the construction of a suspension bridge. The towers on either side will rise from the water's edge. Between them will be a clear span of 500 feet over the river. The shore arm of each cantilever having been built and anchored, the other arm will be constructed in sections of 25 feet, the whole being made self-sustaining as each section is added. The ends of the cantilevers will reach only 375 feet beyond the towers, leaving a gap of 125 feet to be filled. The link will be supplied by an ordinary truss bridge, which will be swung into place and rested on the ends of the cantilevers. Here provision will be made for expansion and contraction by allowing play between the ends of the truss bridge and of the cantilevers. At the same time the bridge will be thoroughly braced, so as to prevent danger from the lateral pressure of the wind. The "wave" motion perceptible on a suspension bridge will not be felt on the new structure. The total length of the bridge will be 895 feet. It will have a double track and will be strong enough to bear two of the heaviest freight trains extending the entire length of the structure, and under a side pressure of wind at 75 miles per hour, and even then it is to be strained to only one-fifth of its ultimate strength.

The towers will not rest on bed-rock, as the rush of the river would sweep away any caissons or other works intended to be used for excavations, but the foundations will be in the large boulders that have dropped from the cliff during the past ages, the crevices being filled in with cement, making a solid foundation. The pressure will be so divided that upon the foundation rocks it will be only 25 pounds per square inch. The top of the stone structures will be 50 feet above the water level, and from these the steel towers supporting the cantilevers will rise 130 feet. From the tower foundations up the whole bridge will be of steel, every inch of which will be subject to the most rigid tests from the time it leaves the ore to the time it enters the structure.

NEW PUBLICATIONS.

STRENGTH OF MATERIALS. By Thomas Box. Published by Messrs. E. & F. N. Spon, London and New York. Size, 7⅛ x 5 inches; 525 pages. Price, $7.25.

One of the latest additions to the list of valuable engineering text-books is the above work, a copy of which reached us a short time since. The book, as its title alone will show, covers a wide field, and the author in his endeavors has been eminently successful in presenting the matter in a popular and pleasing shape, and devoid of all intricate mathematical manipulations which in so many cases effectually prevent the reader from intelligently perusing the subjects presented. The twenty-three chapters embodied in the work, together with an appendix, will be found to contain a large amount of valuable information, practical examples being given in numerous instances in order to more clearly explain the methods of calculation adopted. Not the least interesting and valuable feature of the book are a number of tables, giving the strengths of different materials used in engineering works, the tensile strain on pump-rods in practice, permanent sets of cast iron under tensile and compressive strains, and a host of others too numerous to mention. Some 225 engravings distributed over 27 plates, constitute the concluding portion of the work. Were it not for the fact that they give rise to an excessive amount of annoyance, necessitating, as they do, a constant turning from one portion of the book to another for reference, they would be considered a desirable adjunct to the text. As it is, they are ever suggestive of a deplorable lack of judgment in the arrangement of the matter, and can never meet with the favor of the reader. We have at different times had occasion to dwell upon this point, and have been supported and strengthened in our opinion by the numerous complaints from readers who have explained the difficulties mentioned, and it is to be hoped that the practice of arranging engravings in this manner will in the future be abandoned by the few who have thus far retained it.

CONVERSION TABLES. By Robert H. Thurston. Published by John Wiley & Sons. Size, 6 x 9¼ inches; 83 pages. Price, $1.

The contents of this work are the metric tables, the British and the United States tables, abstract of conversion tables by Lieutenant Birnie, the conversion tables by Noble, and a variety of additional conversion tables and the centimeter-gram-second system of units. The work is completed by three pages of four-figure logarithms, which are exceedingly compact. The work is a great convenience, and will be a valuable addition to the mechanics' standard books of reference.

THE ENGINEERS' SLIDE RULE AND ITS APPLICATION By William Tonkes; size, 5 by 7 inches; 35 pages. Price, 25 cents.

This little book is No. 6 of the "Work Manuals" published by the Industrial Publication Co., and, like the others of the series, is eminently practical in its scope. In the slide rule, as in any other system of mechanical or graphic methods for calculation, it is absolutely essential that the reasons for the different operations should be clearly understood, and the principles on which the method depends be made perfectly familiar. These principles the author has endeavored to demonstrate in a clear manner in order to give the reader a perfect command of the instrument. As a means for the performance of complex calculations quickly and without effort the slide rule and its modifications are unrivaled. Problems which would require long and tedious calculation, even to obtain rough approximations, can be solved with any of the slide rules in the market very quickly and with an error which is quite small. If taken only as a means for ready and approximate solution of such problems, the slide rule will be found of immense value on any engineer's desk.

Nails in the Days of Our Great-Grandfathers.—To obtain the supply of nails was in the eighteenth century by no means the easy problem that it is now, and many substitutions and makeshifts, such as wooden pins, bolts, clamps, riders, &c., were resorted to to supply the inevitable deficiency. All nails were hammered out by hand at the anvil, and nothing like uniformity in weight or size was attempted. All were of wrought iron, and at best clumsily constructed, and, because of their softness, when one was once started the driver was never sure of its ultimate direction. Every hard substance turned them aside, and holes had to be bored for them in hardwood. Unavailing efforts were made to cast nails singly in molds, but from their brittleness they were found worthless. On our desk before us, says an exchange, we have a collection of nails drawn from the pulpit whence Patrick Henry electrified America by that speech which yet rings through the land with its imperishable burden of liberty or death. These nails were all made in England and brought to Virginia, together with a large proportion of the other building materials early used in America. Like all their prototypes, these are rudely shaped, generally sharp at the point, like a modern horse-nail, thence rapidly getting thicker to the middle, whence they taper slightly to the head. The latter has in all cases been entirely disfigured by driving. They are all sizes, from half an inch to five inches in length, thick or thin without regard to length, and bearing everywhere the imprints of the hammer. When we consider how long it must have taken the blacksmith to pound out a keg of these, we can form some slight conception of the advantages we enjoy from modern methods and appliances.

Taxation of Government Bonds.

Volume XC of the New York Reports, just issued, contains an opinion of the Court of Appeals on an interesting and important point touching the taxation of United States Government bonds. It is well known that these securities are exempt from local taxation. The question before the Court of Appeals was whether the premium on them can be taxed. The assessors in this city had assessed the trustees of an estate at $600,000 for personal property. When it appeared that the property consisted of Government bonds, the assessment was reduced to $72,000, which was the excess of the market over the par value of the bonds. The special term of the Supreme Court sustained the assessment for this reduced amount, holding that the premium on the bonds was not exempt from taxation. This decision was affirmed by the General Term, but both of the lower courts are overruled by the Court of Appeals, which holds that the market value of the bonds is no more subject to taxation than their par value. The court says:

"There is nothing in the statutes which confines the exemption from taxation to the par value of the bonds, and there is nothing in the reason on which such exemption is based which should so confine it. The fact that Government bonds are above par is a mere incident. They may in the market be worth more or less than par, and they may fluctuate from week to week and month to month, depending upon the conditions of trade, commerce, finances and other matters. The fact that they are above par may be due to the plethora and cheapness of money, and not to any actual increase in value as compared with any fixed standard. * * * If the premiums upon such bonds, over which the holder has no control, which he can neither create nor destroy, and which do not really indicate any enhanced value of the bonds, can be taxed, the policy of the law as to the exemption of Government securities from taxation would be greatly violated. The premium is part of the entire value of the bond, and when that is taxed the bond is taxed; or, what is equally condemned, the value or a part of the value of the bond is taxed. A conception of the premium upon a bond as a distinct entity for the purpose of taxation is too transcendental and metaphysical for common comprehension and judicial cognizance."

This decision is sound and sensible. In rendering it the Court of Appeals virtually reverses a ruling of its own made two or three years ago on this very question.

Ferro-Prussiate Multiplying Process.

An improvement has recently been made, says *Engineering*, in this very convenient process for producing copies of drawings in white lines on blue ground, by Messrs. Schleicher and Schüll, of Düren, Rhenish Prussia. These enterprising paper manufacturers have introduced a continuous transparent drawing parchment, in rolls 40 inches wide, and at a very reasonable cost, which is sufficiently transparent to be used in place of the usual tracing, and is still an excellent drawing paper, with a very fine surface, takes pencil and ink well, and will allow lines in pencil to be rubbed out or ink lines to be either scraped out or washed off the surface. It is, moreover, exceedingly tough and well suited for small scale drawings. The instructions for producing blue prints supplied by the above-mentioned firm are as follows: Ammonia citrate of iron, 2 pounds 5½ ounces avoir.; red prussiate of potash, 1 pound 9 ounces avoir.; dissolve separately in water, mix and make the whole up to 1 gallon, this solution to be carefully kept from light. Ordinary paper, upon which the copy is to be produced, is then well brushed over with the solution in a dark room, and there left to dry. The drawing in transparent parchment or a tracing is then placed in a copying frame, with its face to the glass; a piece of ferro-prussiate paper is placed behind and the frame closed, taken out of the dark room and exposed to sunlight. The yellowish-green color of the prepared paper changes through bluish-green and bluish-gray tints into an olive green with metallic reflections; at this stage the process must be interrupted, the frame taken back in the dark room and opened, the drawing washed in cold rain water until the lines are pure white on blue ground, when it can be dried between blotting paper. To be able to watch the progress of the process better, it is advisable to leave the ferro-prussiate paper longer than the frame; the exposure varies with the intensity of the light from 5 to 30 minutes; correct time for stopping is soon learned.

The question of what is the best cylinder oil is often asked, and yet does not seem to have received a very definite answer. Castor oil has been used very frequently in high-speed engines with eminent satisfaction, and was, we understand, used for a long time in the Porter-Allen engines at Willimantic. In

another instance, we know of a case where it has been used for a long time in a 22 by 36 engine running 130 revolutions per minute. Those who like castor oil seem to be enthusiastic in its favor, while others who do not succeed with it are equally anxious to prove its bad qualities. Sperm and the other animal oils are generally considered out of the question. Practically, it would seem that a good deal yet remains to be said in regard to the oils most suitable for different kinds of cylinders.

INDUSTRIAL ITEMS.

MAINE.

The Lincoln Iron Works, manufacturers of stone mill and quarry machinery, are driven day and night to fill orders, mainly on gang saws for the marble producing mills. Orders are nearly filled for 30 gangs of these saws. The company also manufacture a heavy line of wood-working machinery, shafting, pulleys and gearing. A large business is also done in rubbing beds for marble mills, which is one of their principal specialties.

MASSACHUSETTS.

The new tool company at Greenfield, to be known as the Greenfield Tool Works, is to start up the old tool company's shops. It is understood that cutlery will be the principal line of manufacture.

A case of interest to manufacturers is pending in the Superior Court, in the suit by the Florence Machine Co. against the Attleboro Stove Works for breach of contract. A year ago the Florence Co. contracted with the Attleboro Co. for 5000 complete stoves. After having supplied about 900 the contract was given up and the Florence Co. lost $5000, it is claimed. The defendants say that patterns were not supplied in time.

More than 10,000 pairs of iron lasts have been made in Worcester within a few months. The inventor and manufacturer has disposed of his patents to an iron-last company of New York, who will establish iron-last manufactories in Chicago, San Francisco, and other important boot and shoe manufacturing centers, and will make Worcester the chief point for supplying iron lasts to boot and shoe manufactories in the New England States, thus adding a new and important branch of manufacturing to the industries of that city.

PENNSYLVANIA.

The coal product of the Schuylkill region for the week ending June 16 was 180,188 tons, as against 100,354 tons for the week previous, and 148,219 tons for the corresponding week of last year. The total product for the week was 739,774 tons, against 701,864 tons for the same week of last year, an increase of 37,910 tons. The total product for the year was 12,629,838 tons, against 11,247,046 tons for the corresponding period of last year, an increase of 1,382,792 tons.—*Pottsville Journal.*

The puddle department of the Allentown Rolling Mill resumed work on Monday of last week. Six of the 17 furnaces are lit up. The rolls in the rail mill will be tried some time this week for making girder iron.

The Peerless Colliery, at Shamokin, owned and operated by Messrs. Cruikshank & Emes, was on Thursday sold to the Philadelphia and Reading Coal and Iron Co. The colliery employs nearly 300 men and boys, and is very remunerative. The price paid is said to be $50,000.

A break last week at the bottom of Leesport Furnace beneath the trough caused the escape of about 30 tons of iron, which ran into the casting house, and at one time threatened the destruction of the buildings by fire. Prompt action of the men, however, prevented any further damage.

Many of the departments of the Phœnix Iron Co., Phœnixville, have been started on double turn.

It is probable that the Iowa Barbed Wire Works will be removed from Johnstown to Easton. The orders of the works are so heavy as to cause them to run 14 hours per day.

Powelton Furnace, at Saxton, Bedford County, will have a mate, as Mr. Powel intends to build a second furnace soon. He also intends to put up 50 more coke ovens, making 155 in all. The lands from which he draws his supplies, including fossil and hematite ores, have an extent of 25 miles in length, and are owned by him.

A nail factory is to be started at Catawissa.

OHIO.

The La Belle Glass Works, Bridgeport, are arranging to close down on June 30 There will be some very necessary repairs made during the vacation, and in August it will start up again, and no doubt will be able to do as much as ever.

The Youngstown Steel Casting Co. is at present idle, there being neither demand nor price offered for their products that would warrant them in running. During their usual shut-down this summer the William Anson Wood mower and reaper works contemplate enlarging their foundry in order to increase their capacity for production.—*Youngstown News Register.*

The Akron Cutlery Co. is being reorganized into a $30,000 stock company, most of which has already been taken by Akron capitalists.

The new Maumee Rolling Mill, at Toledo, will be put in operation July 1. It is expected 2000 men will be employed.

The plate department of Ward's New Philadelphia mill is idle, owing to a breakage of the driving-wheels.

Girard Furnace is producing over 100 tons Bessemer pig per day.

ILLINOIS.

The Chicago Spring Co.'s works are being enlarged, and some new machinery is being added.

The North Pier Foundry Co., of Chicago, cast last week a two-ton press for the Chicago Stamping Co., and are taxed to their utmost to keep up with their orders.

The machine shop for the new watch factory to be erected at Aurora will be built at once.

MISSOURI.

The Laclede Fire-Brick Mfg Co. are now operating 23 kilns, 5 of which are 24-foot ones. Their retort department is crowded beyond precedent, their orders for this kind of goods exceeding by more than 100 per cent. those of any other season. Among their recent orders were one from the Springfield (Ohio) Gas Works for the building of five benches of sixes, being the second order from that works; one from the Wheeling Gas Works for the building of 12 benches, and another from the Cincinnati Gas Works for 600,000 fire-brick.

The Missouri Malleable Iron Co., who recently increased their capital stock, are making arrangements to more than double their present capacity by building one or two more furnaces, putting in new machinery and extending their foundry by the putting up of a new addition. These improvements will be completed some time in July, when the company expect to be able to meet promptly every order for malleables. Their foundry department is full of work.

WISCONSIN.

The merchant mill, blast furnace and six furnaces in the puddling mill of the North Chicago Rolling Mill Co.'s works at Bay View are now in operation. The other two furnaces of the puddling mill will probably remain idle for some time. The first plate-mill will be started up as soon as the repairs are completed. The blast furnace will probably be "banked" within a few days, and the company are talking some of converting the rail-mill, which has been idle since last January, into a mill for the manufacture of nails.—*Chicago Industrial World.*

The Texas State Penitentiaries' Blast Furnace.—The Penitentiary Board of Texas will receive, at Austin, sealed proposals, up to 1 o'clock p. m., July 16, 1883, for the labor of from 500 to 1000 convicts belonging to the Texas State penitentiaries at Huntsville and Rusk. According to the *Bulletin* of the American Iron and Steel Association, the following circular has been received from the board: "The buildings of the Rusk Penitentiary are in an area of about nine acres, inclosed by a high brick wall. There has recently been purchased for this prison, but not yet placed, about $75,000 worth of new first-class machinery for wood and iron work. Just outside the walls, and considered a part of the penitentiary, there is being erected, according to the most improved modern plans, a blast furnace for smelting iron ore, with a capacity of 25 tons of pig iron per day. This furnace, when completed, will cost nearly $45,000. The hills surrounding the penitentiary abound with iron ore of the brown hematite class of very fine quality, and tests show that it will yield from 40 to 50 per cent. of metallic iron. This iron has been proved to be well adapted to the manufacture of car wheels and castings. A person contracting for this furnace and convict labor to operate it will have the right to use the ore on several thousand acres of land. Wood for making charcoal may be procured near by or on the line of the railroad. This penitentiary was located at Rusk because of the large deposit of iron ore in the vicinity, and with a view of working it."

Wood-Polishing Wheels.—The great advantages to be gained in the use of wood-polishing wheels in many instances has not been fully appreciated by machinists and metal finishers, owing largely to the fact that, in machine shops especially, the right time never comes for making them, or if they are made, owing to the lack of facilities and experience, the wheels are not satisfactory in character. Recognizing the general failing in wood-polishing wheels of common construction, and the advantages to be gained by the proper employment of these wheels, the Union Stone Co., of Boston, Mass., have fitted up a special department for their manufacture, and now announce that they are in condition to furnish first-class wheels of this description at so low a price that no machine shop or metal-finishing establishment can afford to make their own or be without them. From their circular, which we have recently received, we learn that the best-seasoned lumber is employed, and that the wheels are put together in the most thorough and substantial manner to keep them always strong and true. The best leather is used in covering, and is firmly fastened to the wheel, which is perfectly balanced. The wheels are made with an iron-flange bushing, which is fitted to any sized arbor or machine. Wheels with faces of special shape are prepared to order.

According to a dispatch from Indiana, Pa., the Mahoning Furnace Co., of Armstrong County, made an assignment on Thursday last. The liabilities are given at $70,000, and the assets, it is claimed, are $75,000.

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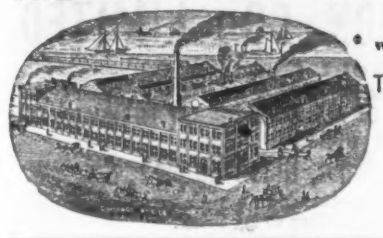

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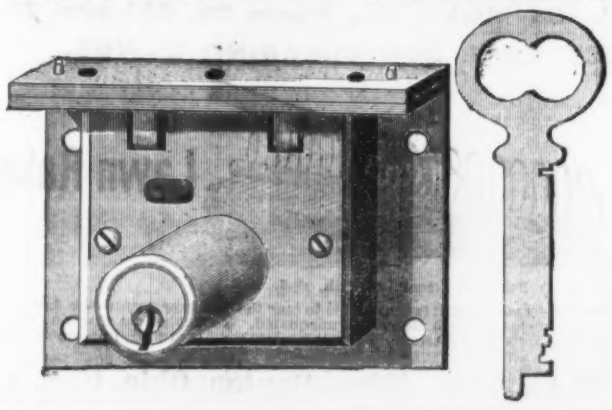

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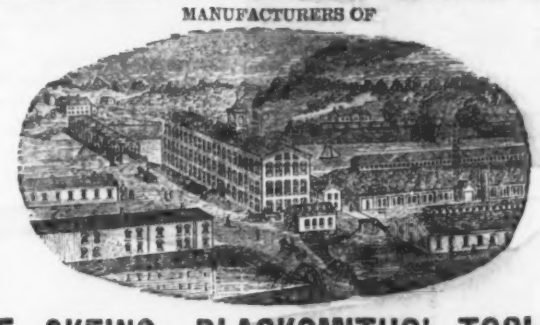

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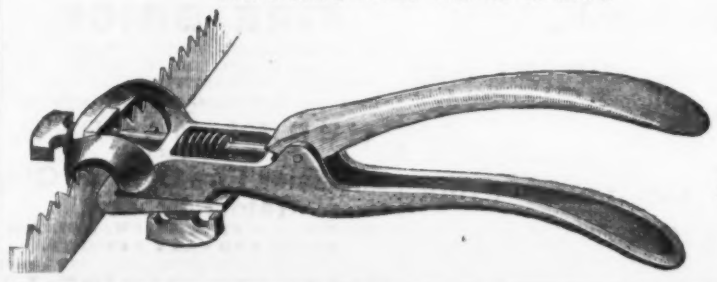

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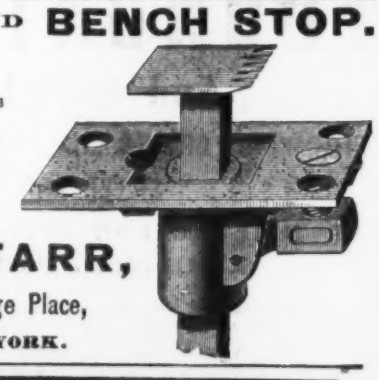

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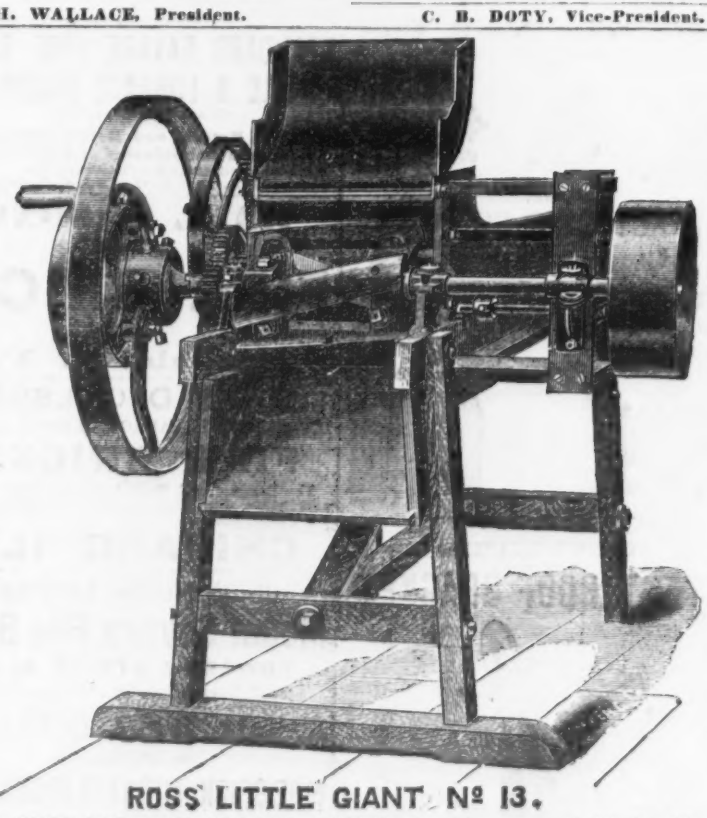

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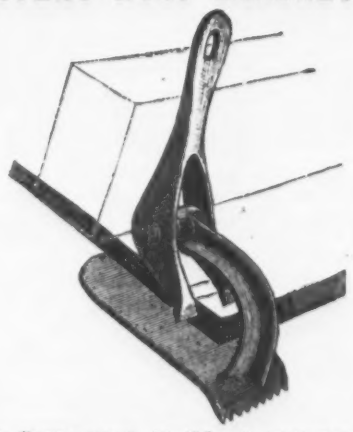

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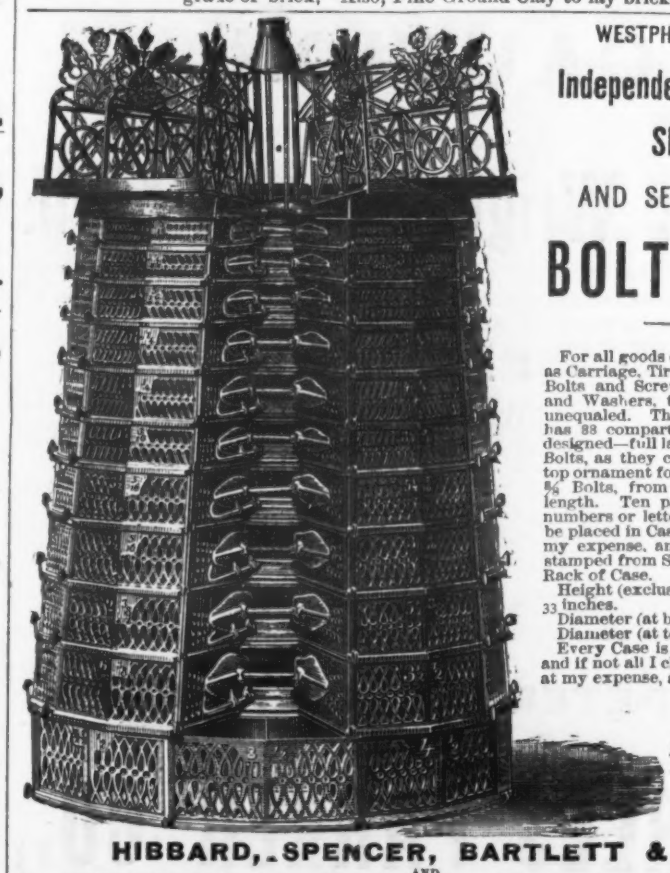

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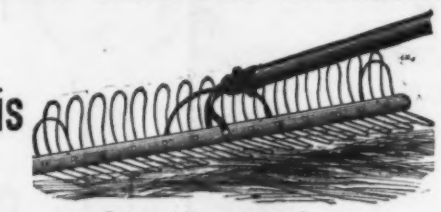
The Davis  **Lawn Rake**

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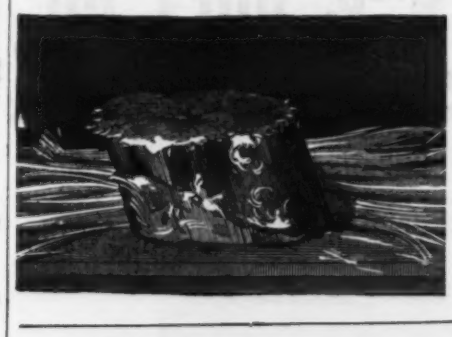

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Hawk Eye Steel Barb Fence Co., Burlington, Iowa ... 39
Iowa Barb Wire Co., 99 John, N. Y. ... 2
Middleton C. W. & H. W., Philadelphia, Pa. ... 9
Ohio Steel Barb Fence Co., Cleveland, O. ... 37
Washburn & Moen Mfg. Co., Worcester, Mass. ... 2

Bellows, *Manufacturers of.*
Flaccus Wm. & Son, Pittsburgh, Pa. ... 9
Scott Geo. M. Chicago, Ill. ... 18

Bells.
The Miller Co., Canton, O. ... 39

Bells (Sleigh.)
Bevin Bros. Mfg. Co., Easthampton, Conn. ... 36

Belt Hooks.
Browning, Sisum & Co., 85 Chambers, N. Y. ... 2

Belting, *Makers of.*
Alexander Bros., 412 N. 3d, Philadelphia ... 35
N. Y. Belting and Packing Co., 29 Park Row, N. Y. 13

Belt Oil.—Post E. L. & Co., 10 Peck Slip, N. Y. ... 17

Belt Protectors.
Lewis Edward S., Albany, N. Y. ... 40

Bicycles.
Pope Mfg. Co., 597 Washington, Boston ... 44

Bird Cages. *Makers of.*
Gunther G., 46 Park Place, N. Y. ... 3
Lindeman O. & Co., 254 Pearl, N. Y. ... 3
Maxwell John, 247 and 249 Pearl, N. Y. ... 7

Blind Awning Fixtures.
North F. W. & Co., Boston, Mass. ... 12

Blasting Materials.
Hercules Powder Co., Cincinnati, O. ... 29

Blocks, Tackle. *Makers of.*
Bagnall & Loud, Boston, Mass. ... 41
McCoy & Sanders, 26 Warren, N. Y. ... 38
McMillan Wm. H. & Bro., 113 South, N. Y. ... 44
Michigan Block Works, Detroit, Mich. ... 44
Penfield Block Co., Lockport, N. Y. ... 16

Boilers, How to Keep Clean.
Hotchkiss J. F., 84 John, N. Y. ... 12

Boilers, Steam.
Edge Moor Iron Company, 79 Liberty, N. Y. ... 17
Harrison Boiler Works, Philadelphia, Pa. ... 43
Lowe & Watson, Bridgeport, Conn. ... 37
McNeil, James & Bro., Pittsburgh, Pa. ... 29

Bolt and Rivet Clippers.
Chambers, Brother & Co., Philadelphia, Pa. ... 36

Bolt and Screw Cases.
Am. Bolt and Screw Case Co., Dayton, O. ... 38
Westphal Henry, Chicago, Ill. ... 30

Bolt Cutters.
Howard Iron Works, Buffalo, N. Y. ... 32
Novelty Iron Works, Cleveland, Ohio ... 20
Sellers Wm. & Co., Phila., and 79 Liberty st., N. Y. 43
Wiley & Russell Mfg. Co., Greenfield, Mass. ... 38

Bolts.—American Bolt Co., Lowell, Mass. ... 40
Wm. H. Haskell Co., Pawtucket, R. I. ... 41
Lovejoy & Drake, 101 Reade, N. Y. ... 25
Moore, S. H. & E. Y., Chicago ... 35
Pawtucket Mfg. Co., Pawtucket, R. I. ... 28

Boring Machines.
W. B. Wells Mfg. Co., Ashaway, R. I. ... 38

Boxes for Hardware.
Green S. H., 12 Murray, N. Y. ... 32

Brass, *Manufacturers of.*
Ansonia Brass and Copper Co., 19 Cliff, N. Y. ... 2&9
Bridgeport Brass Co., Bridgeport, Conn. ... 3
Brown & Bros., 81 Chambers, N. Y. ... 2
Davol John & Sons, 190 John, N. Y. ... 2
Detroit Copper and Brass Rolling Mills, Detroit, Mich. ... 2
Holmes, Booth & Haydens, 49 Chambers, N. Y. ... 2
Plume & Atwood Mfg. Co., 18 Murray, N. Y. ... 2
Rome Iron Works, Rome, N. Y. ... 2
Scovill Mfg. Co., 421 Broome, N. Y. ... 2
Waterbury Brass Co., 296 Broadway, N. Y. ... 2
Waterbury Mfg. Co., Waterbury, Conn. ... 3

Brass Butt Hinges.
Tiebout W. & J. 16 and 18 Chambers, N. Y. ... 25

Brass Founders.
Lunkenheimer F., Cincinnati, O. ... 8
McFarland Wm., Trenton, N. J. ... 43
Reeves Paul S., Philadelphia ... 44
Reynolds Martin, Brooklyn, E. D., N. Y. ... 28

Bridge Builders.
Moseley Iron Bridge and Roof Co., 5 Dey, N. Y. ... 4

Bronze Bearings.
Am. Bronze Works, Cleveland, O. ... 41

Buckets, Pump and Elevator.
Rowland T. F., Brooklyn, N. Y. ... 44

Builders' Hardware.
Clark Mfg. Co., Buffalo, N. Y. ... 33
Whipple Mfg. Co., Cleveland, O. ... 13

Butcher and Shoe Knives. *Manufacturers of.*
Wilson John, Sheffield, England ... 10

Butts and Hinges.
Stanley Works, New Britain, Conn. ... 33
Union Mfg. Co., 96 Chambers, N. Y. ... 7

Cabinet Locks.
Yale & Towne Mfg. Co., Stamford, Conn. ... 11

Car Axles.
Roberts A. & P. & Co., 265 S. 4th, Philadelphia ... 5

Carriage Bolts. *Makers of.*
Townsend, Wilson & Hubbard, Philadelphia ... 41

Carriage Hardware. *Makers of.*
Liggett Spring and Axle Co., Pittsburgh, Pa. ... 8
Smith H. D. & Co., Plantsville, Conn. ... 12
The E. D. Clapp Mfg. Co., Auburn, N. Y. ... 8

Carts.—C. Spring Cart Co., Rushville, Ind. ... 30

Casters.—Phœnix Caster Co., Indianapolis, Ind. ... 10
Payson Mfg. Co., Chicago, Ill. ... 10
Yale Caster Co., New Haven, Conn. ... 39

Castings, Brass and Iron.
Whipple Mfg. Co. ... 13

Castings, Iron.
Bowler & Co., Cleveland, Ohio ... 6
S. Cheney & Son, Manlius, N. Y. ... 20
Devlin Thos. & Co., Philadelphia, Pa. ... 7
Haight & Clark, Albany, N. Y. ... 9
Hammer & Co., Branford, Conn. ... 10
Riverside Foundry Works, Cleveland, Ohio ... 3
Syracuse Malleable Iron Works, Syracuse, N. Y. ... 4
Youngstown Malleable Iron Co., Youngstown, O. ... 7

Castings, Steel.
Chester Steel Castings Co., 407 Library, Phila., Pa. 41
Eureka Cast Steel Co., Chester, Pa. ... 44
Flagg Stanley G. & Co., Philadelphia ... 44
Mackintosh, Hemphill & Co., Pittsburgh, Pa. ... 40
Pittsburgh Steel Casting Co., Pittsburgh, Pa. ... 44

Chains, *Manufacturers of*
Bradlee & Co., 816 Richmond St., Phila., Pa. ... 5

Chemicals
Eimer & Amend, 205 Third Ave., N. Y. ... 37

Chisels, *Manufacturers of.*
Buck Bros., Millbury, Mass. ... 13

Civil Engineer and Geologist.
Randolph B. S., Martinsburg, W. Va. ... 19

Clay Pigeons and Traps.
The Clay Pigeon Co., Cincinnati, O. ... 16

Clock Springs, &c.
Dunbar Bros., Bristol, Conn ... 7

Clothes Dryers.
Hill Dryer Co., Worcester, Mass. ... 18

Coal, *Miners of.*
Pardee A. & Co., 111 Broadway, N. Y. ... 36

Coffee and Spice Mills.
Lane Brothers, Poughkeepsie, N. Y. ... 30
Enterprise Mfg. Co., Philadelphia, Pa. ... 33

Coke.—Schoonmaker, J. M., Pittsburgh, Pa. ... 30

Commission Agents.
Mustard & Co., Shanghai, China ... 18

Compasses and Calipers, *Manufacturers of.*
Bemis & Call Hdw. & Tool Co., Springfield, Mass. ... 29&33
Stevens J. & Co., Chicopee Falls, Mass. ... 12

Copper.—Brown & Bros., 81 Chambers, N. Y. ... 2
New Haven Copper Co., 290 Pearl, N. Y. ... 2
Pope, Cole & Co., Baltimore, Md. ... 3
Pope Thos. J. & Bro., 292 Pearl, N. Y. ... 4

Cordage.
Elizabethport Steam Cordage Co., 48 South, N. Y. ... 35

Corrugated Iron.
Merchant & Co., Philadelphia, Pa. ... 27
Moseley Iron Bridge and Roof Co., 5 Dey, N. Y. ... 4

Coverings, Boiler and Pipe.
Chalmers Spence Co., 23 John St., N. Y. ... 28

Crucibles.
Seidel R. B., Philadelphia, Pa ... 39

Cupolas.
Smith & Sayre Mfg. Co., 245 Broadway, N. Y. ... 43

Cutlery, *Importers of.*
Boker Hermann & Co., 101 Duane, N. Y. ... 32
Conway T. G., 88 Chambers, N. Y. ... 11
Clatworthy F. & W., 82 Chambers, N. Y. ... 10

Cutlery, *Manufacturers of.*
Bannister A. F. & Co., Newark, N. J. ... 10
John Russell Cutlery Co., Turners Falls, Mass. ... 44

Derrick Winches.
The Yale & Towne Mfg. Co., Stamford, Conn. ... 11

Dog Collars.
Medford Fancy Goods Co., 96 Duane, N. Y ... 9

Dinner Pail and Lantern.
Haight Joseph, Port Chester, N. Y. ... 8

Door Hangers, House and Barn.
Lovejoy & Drake, 101 Reade, N. Y. ... 25
Moore S. H. & E. Y., Chicago, Ill. ... 35
Stearns E. C. & Co., Syracuse, N. Y. ... 44

Drills.
Pope & Stevens, 114 Chambers, N. Y. ... 27

Drill Braces.
Millers Falls Co., 74 Chambers, N. Y. ... 25

Drilling Machines. *Makers of.*
Clark, Sintz & Co., Springfield, O. ... 44
Dallett Thos. H. & Co., Philadelphia, Pa. ... 42
E. L. Harrington, Philadelphia, Pa. ... 43
Peerless Punch & Shear Co., 115 Liberty, N. Y. ... 43
Wiley & Russell Mfg. Co., Greenfield, Mass. ... 38

Drop Forgings.
The Billings & Spencer Co., Hartford, Conn. ... 27
Brown R. H. & Co., Westville, Conn. ... 42

Drop Hammers.
Williams, White & Co., Moline, Ill. ... 28

Eaves Trough Hanger.
Heartley Geo. W., Toledo, O. ... 32

Edge Tools. *Makers of.*
Doscher M., 85 Chambers, N. Y. ... 41

Elevators. *Makers of.*
Clem & Morse, Philadelphia Pa. ... 43
Crane Bros. Mfg. Co., Chicago, Ill. ... 42
Eaton & Prince, Chicago, Ill. ... 2
Stokes & Parrish, Philadelphia ... 42
Tewksbury Automatic Elevator Co., Newark, N. J. 12

Emery and Corundum Wheels.
Vitrified Wheel Co., Westfield, Mass ... 37

Engines, Fire.
La France Fire Engine Co., Elmira, N. Y. ... 41

Engines, Gas.
Schleicher, Schumm & Co., Philadelphia ... 43

Engines, Locomotive.
Baldwin Locomotive Works, Philadelphia, Pa. ... 6

Engines, Steam. *Makers of.*
Cooke & Co., 12 Cortlandt, N. Y. ... 9
Cox & Sons, Philadelphia, Pa. ... 43
Dunbar, R. & Son, Buffalo, N. Y. ... 42
Ervien Chas. W. & Co., Philadelphia, Pa. ... 43
Noteman Rotary Engine & Pump Co., Toledo, O. ... 41
Rumsey L. Mfg. Co., St. Louis, Mo. ... 40
Southwark Foundry & Machine Co., Philadelphia ... 43
The Cummer Engine Co., Cleveland, O. ... 29
The Norwalk Iron Works Co., S. Norwalk, Conn. ... 42
The Pusey & Jones Co., Wilmington, Del. ... 42
Wetherill Robt. & Co., Chester, Pa. ... 43

Facings, Foundry.
Am. Facing Co., 517 W. 15th, N. Y. ... 30
Emerick, J. A. & Co., Philadelphia, Pa. ... 3
Paxson J. W. & Co., 514 Beech, Phila. ... 5

Faucets. *Makers of.*
McNab & Harlin Mfg. Co., 50 Gold, N. Y. ... 41
North Brothers, Philadelphia, Pa. ... 25

Faucets, *Self-Measuring, Makers of.*
Enterprise Mfg. Co., of Pa., Phila. and N. Y. ... 33
Lane Bros., Poughkeepsie, N. Y. ... 30

Feed Cutters.
Ross E. W. & Co., Fulton, N. Y ... 29

Fences, Wrought Iron.
E. T. Barnum Wire and Iron Works, Detroit, Mich 33
National Wire and Iron Co., Detroit, Mich. ... 32
Van Dorn Iron Works, Cleveland, O. ... 12

Files, *Importers of.*
Field Alfred & Co. 93 Chambers, N. Y. ... 10
Carr J. & Riley 30 Gold, N. Y. ... 36
Montgomery & Co., 105 Fulton, N. Y. ... 40
Moss F. W., 80 John, N. Y. ... 36

Files, *Manufacturers of.*
Auburn File Works, 89 Chambers, N. Y. ... 8
Barnett G. & H., 41 and 43 Richmond, Phila. ... 8
Detroit File Works, Detroit, Mich. ... 8
Everhart James M., Scranton, Pa. ... 44
Hensler Christian, Philadelphia, Pa. ... 8
Hiscox File Mfg. Co., West Chelmsford, Mass. ... 8
Johnson & Bro., 1 Commercial, Newark, N. J. ... 8
McCaffrey & Bro., 1732 and 1734 N. 4th, Phila. ... 8
Nicholson File Co., Providence, R. I. ... 8
Paul Chas. B., Williamsburgh, N. Y. ... 8
Spencer, Mathias & Sons, Sheffield, England ... 10
Union File Works, Baltimore, Md. ... 8

Fire Brick. *Makers of.*
Borgner & O'Brien, Philadelphia, Pa. ... 30
Climax Fire Brick Co., Pittsburgh, Pa. ... 17
Colson Chas. D., Chicago, Ill. ... 30
Evens & Howard, St. Louis, Mo. ... 27
Gardner Brothers, Pittsburgh, Pa. ... 30
A. Hall Terra Cotta Co., Perth Amboy, N. J. ... 30
Hall & Sons, Buffalo, N. Y. ... 30
Kreischer B. & Sons, foot of E. Houston, N. Y. ... 30
Maurer Henry, 418 East 23d, N. Y. ... 30
Newton & Co., Albany, N. Y. ... 30
Ostrander James & Son, Troy, N. Y. ... 30
Perth Amboy Terra Cotta Co., 80 and 81 Astor House, New York ... 30
Rimington S. A., 40 and 42 Broadway, N. Y. ... 30
Union Mining Co., Philadelphia, Pa. ... 30
Valentine M. D. & Bro., Woodbridge, N. J. ... 30
Watson Fire Brick Co., Perth Amboy, N. J. ... 30
Woodland Fire Brick Co., Woodland, Pa. ... 30

Fishing Reels.
Malleson, Fred'k, Brooklyn, E. D., N. Y. ... 10

Fittings, Malleable and Gray Iron.
Star Machine Works, Cleveland, O. ... 27

Fluor Spar.
Burbank B. & Co., Evansville, Ind ... 30

Fluters.
Graham & Haines, 113 Chambers, N. Y. ... 8

Forges, Portable, &c.
Buffalo Forge Co., Buffalo, N. Y. ... 16
Holt Mfg. Co., Cleveland, O. ... 41
Keystone Portable Forge Co., 218 Carter, Phila. ... 16

Forgings, Iron and Steel.
Alker & Cromlish, Allegheny, Pa. ... 4

Foundry Supplies.
Am. Facing Co., 517 W. 15th, N. Y. ... 30
Emerick J. A. & Co., Philadelphia, Pa. ... 3

Furnace Hoists.
Stokes & Parrish, Phila., Pa. ... 42

Furnaces, *Makers of.*
Richmond & Potts, 110 S. 4th, Phila., Pa. ... 5

Grain Scoops.
Hussey, Binns & Co., Pittsburgh, Pa. ... 27

Grate Bars.
Creswell David S., Philadelphia, Pa. ... 43
Salamander Grate Bar Co., 110 Liberty, N. Y. ... 12

Grindstones.
Lombard & Co., Boston, Mass. ... 33
McDermott & Berea Stone Co., Cleveland, O. ... 33
Ohio Grindstone Co., Cleveland, O. ... 33
Wood Walter R., 283 and 285 Front, N. Y. ... 33
Worthington & Sons, Cleveland, O. ... 28

Gunpowder, *Makers of.*
Laflin & Rand Powder Co. 29 Murray, N. Y. ... 40

Guns, Pistols, &c.
Kittredge B. & Co., Cincinnati, O. ... 10

Hammers.
Hartford Hammer Co., Hartford, Conn. ... 28

Hammers, Steam.
Bradley & Co., Syracuse, N. Y. ... 44

Hand Force Pumps.
Union Mfg. Co., 96 Chambers, N. Y. ... 7

Handles (Hammer).
Musselman & Son, Quakertown, Pa. ... 7

Handles (Hickory).
McCullough, Woodbury & Co., Knoxville, Tenn. ... 35

Handles, Tool
Jennings C. E. & Co., 96 Chambers, N. Y. ... 35

Handles and Spokes.
Hundley V. G., 79 Reade, N. Y. ... 38

Hardware Commission Merchants.
Field Alfred & Co., 93 Chambers, N. Y. ... 10
Lovejoy & Drake, 101 Reade, N. Y. ... 25

Hardware Dealers.
Lloyd, Supplee & Walton, 625 Market, Phila. ... 25

Hardware Importers.
Boker Hermann & Co., 101 Duane, N. Y. ... 32
Field Alfred & Co., 93 Chambers, N. Y. ... 10

Hardware Manufacturers.
Enterprise Mfg. Co., Phila. ... 33
Lloyd, Supplee & Walton, 625 Market, Phila., Pa. ... 25
Miller's Falls Co., 74 Chambers, N. Y. ... 25
Shepard Hardware Co., Buffalo, N. Y. ... 35
Stanley Works, New Britain, Conn. ... 33
Trenton Lock & Hardware Co., Trenton, N. J. ... 16
Union Mfg. Co., 99 Chambers, N. Y. ... 7
Whipple Mfg. Co., Cleveland, O. ... 13

Hardware Specialties.
American Machine Co., 128 Chambers, N. Y. ... 40
Hotchkiss G. M. & Co., West Haven, Conn. ... 3
Kyser & Rex, Philadelphia, Pa. ... 25
Moore S. H. & E. Y., Chicago ... 35
Rhode Island Tool Co., Providence, R. I. ... 18
Shepard Hardware Co., Buffalo, N. Y. ... 35
Spencer & Underhill, 94 Chambers, N. Y. ... 10

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y. ... 33

Hay Knives.
Hiram Holt & Co., East Wilton, Me. ... 41

Heater and Purifier, Feed Water.
Lowe & Watson, Bridgeport, Conn. ... 37

Hinges.
Stanley Works, New Britain, Conn. ... 33
Union Mfg. Co., 96 Chambers, N. Y. ... 7

Hoes.—Bruce George W., 1 Platt, N. Y. ... 9

Hog Ringers.—Blair E., Bucyrus, O. ... 30
Chambers, Bering & Quinlan, Decatur, Ill. ... 33
H. W. Hill & Co., Decatur, Ill. ... 28

Hoisting Engines, *Makers of.*
Crane Bros., Mfg. Co., Chicago, Ill. ... 40&42
Frisbie D. & Co., Philadelphia, Pa. ... 43
Rumsey L. M. & Co., St. Louis, Mo. ... 40

Hoisting Machines.
Box Alfred & Co., 312 Green, Phila. ... 18
Clem & Morse, Philadelphia, Pa. ... 43
Moore S. H. & E. Y., Chicago ... 35
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y. ... 43
Stokes & Parrish, Phila., Pa. ... 42

Hose Reels.
Carr & Hobson, 47 Cliff, N. Y. ... 16
Whelpley R. H., Chicago, Ill. ... 32

Hoists, Portable.
Dunn J. Cleveland, Ohio ... 41

Hooks (Cotton & Bale.)
New York Handle & Mallet Works, 456 E. Houston ... 13

Horse Hay Forks.
Waldron & Sprout, Muncy, Pa. ... 13

Horse Nails. *Makers of.*
Essex Horse Nail Co., Troy, N. Y. ... 6
Livingston Horse Nail Co., 104 Reade, N. Y. ... 16
National Horse Nail Co., Vergennes, Vt. ... 25
New Haven Horse Nail Co., 103 Chambers, N. Y. ... 12
Saranac Horse Nail Co., Plattsburg, N. Y. ... 12

Horse Rasps and Files.
Heller & Bro., Newark, N. J. ... 8

Horse Shoes. *Makers of.*
Rhode Island Horse Shoe Co., Providence, R. I. ... 42
Schoenberger & Co., Pittsburgh, Pa. ... 4
The Burden Iron Co., Troy, N. Y. ... 4

Hot Blast Stoves.
Witherow & Gordon, Pittsburgh, Pa. ... 27

Hydrants, &c.
McLean John, 300 Monroe, N. Y. ... 10
Eddy Valve Co., Waterford, N. Y. ... 41

Hydraulic Jacks.
Dudgeon Richard, 24 Columbia, N. Y. ... 9
Watson & Stillman, 470B Grand, N. Y. ... 43

Ice Cream Freezers.
Roebuck S. & Co., 164 Fulton, N. Y. ... 32
White Mountain Freezer Co., Nashua, N. H. ... 27

Ice Tools.
Heartley Geo. W., Toledo, O. ... 32

Injectors.—Jenks James, Detroit, Mich. ... 40
Flammang Injector Co., Cleveland, O. ... 28

Inspirators.
Fairbanks & Co., 311 Broadway, New York ... 42

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. ... 30

Iron. *(Manufacturers' Agents.)*
Cox, Jr., Justice & Co., 333 Walnut, Phila. ... 5
Froment Frank L. 112 John st., N. Y. ... 4
Hoffman J. W. & Co., 208 S. 4th, Phila. ... 5
Levis Henry & Co., Philadelphia, Pa. ... 5
Lundell Chas. G. (Swedish), Boston, Mass. ... 6

Iron. *Manufacturers of.*
Albany & Rensselaer Iron & Steel Co., Troy, N. Y. ... 36
Birmingham Rolling Mill Co., Louisville, Ky. ... 6
Britton Iron and Steel Co., Cleveland, O. ... 6
Burden Iron Company, Troy, N. Y. ... 4
Calumet Iron & Steel Co., Chicago, Ill. ... 6
Carnegie Bros. & Co., Limited, Pittsburgh, Pa. ... 37
Keystone Rolling Mill, Limited, Pittsburgh, Pa. ... 4
Kirkpatrick & Co., Pittsburgh, Pa ... 4
Leavitt, C. W., 161 Broadway, N. Y. ... 4
Leonard John, 450 West St., N. Y. ... 4
Montour Iron & Steel Co., Danville, Pa. ... 37
Phœnix Iron Co., 410 Walnut, Philadelphia ... 5
Roane Iron Co., Chattanooga, Tenn. ... 6
Rome Merchant Iron Mills, Rome, N. Y ... 4
Rowland James & Co., 920 N. Delaware ave., Phila. 5
Rowland Wm. & Harvey, Philadelphia ... 44
Shoenberger & Co., Pittsburgh, Pa. ... 4
Springfield Iron Co., Springfield, Ill. ... 6
The Passaic Rolling Mill Co., Paterson, N. J. ... 4
Ulster Iron Works, 90 Broadway, N. Y. ... 4
Wood Alan & Co., Arch, Philadelphia ... 5

Iron Brokers.
Blakey & Walbaum, Philadelphia, Pa. ... 5
Boynton Geo. A., 70 Wall, N. Y. ... 40
Etting Edward J., Philadelphia, Pa. ... 5
Fox & Drummond, 68 Wall, N. Y. ... 4
Smith E. D., Philadelphia, Pa. ... 5
Watts Ethelbert, Philadelphia, Pa. ... 5

Iron, Charcoal. *Warm or Cold Blast.*
Hernsheim L. (Austrian), 20 Nassau, N. Y. ... 6
Lundell Chas. G. (Swedish), Boston, Mass. ... 6
Quincy John W. & Co., 98 William, N. Y. ... 4

Iron Commission Merchants.
Groome, Roberts & Co., Philadelphia, Pa. ... 5
Heberton & Co., Philadelphia ... 5
Hernsheim L., 20 Nassau, N. Y. ... 6
Lea J. Tatnall & Co., Philadelphia ... 5
Lundberg Gustaf, Boston, Mass. ... 37
Lundell Chas. G., Boston, Mass. ... 6
Mohr J. J., 430 Walnut, Philadelphia ... 5
Wister L. & R. & Co., Philadelphia, Pa. ... 5

Iron Dealers.
Abeel Brothers, 190 South, N. Y. ... 4
Abbott Jere & Co., New York and Boston ... 37
Bonnell, Botsford & Co., Youngstown, O. ... 4
Borden & Lovell, 70 and 71 West, N. Y. ... 4
Carmichael & Emmens, 130 and 132 Cedar, N. Y. ... 4
Cooney Daniel F., 88 Washington, N. Y. ... 4
Cox Justice, Jr., & Co., Philadelphia, Pa. ... 5
Egleston Bros & Co., 160 South, N. Y. ... 4
Gill Mathew, Jr., & Co., Philadelphia, Pa. ... 5
Harrison & Gilloon, 558 to 562 Water, N. Y. ... 4
Heathfield, Eyre & Co., London, England ... 17
Hoffman J. W. & Co., 208 S. Fourth, Philadelphia. 5
Hubbard Chas., 46 Cliff, N. Y. ... 4
Judson B. F., 457 and 459 Water, N. Y. ... 4
Keeley Jerome & Co., Philadelphia, Pa. ... 5
Lovejoy & Drake, 101 Reade, N. Y. ... 25
Lloyd & Lindsay, Philadelphia ... 5
Lundberg Gustaf, 38 Kilby, Boston, Mass. ... 37
Lundell Chas. G. (Swedish), Boston, Mass. ... 6
Middleton W. S., 52 John, N. Y. ... 4
Naylor & Co., 99 John, N. Y. ... 36
Ogden & Wallace, 85, 87, 89 and 91 Elm, N. Y. ... 4
Pierson & Co., 24 Broadway, N. Y. ... 4
Pullman J. Wesley, Philadelphia, Pa. ... 5
Quincy John W & Co., 98 William, N. Y. ... 4
Wallace Wm. H. & Co., Albany and Washington streets, N. Y. ... 4
Wilson E. H. & Co., Philadelphia, Pa. ... 5
Whitney A. R. & Co., 48 Hudson, N. Y. ... 4

Iron Fences.
Champion Iron Fence Co., Kenton, O. ... 30

Iron Founders.
Bannan Fras. B., Pottsville, Pa. ... 6

Iron, Pig. *Importers of.*
Abbott Jere & Co. (Swedish), New York & Boston ... 37
Hubbard, Chas., 46 Cliff, N. Y. ... 4
Lee James & Co., 72 Pine, N. Y. ... 4
Lundberg Gustaf, Boston, Mass. ... 37
Lundell, Chas. G. (Swedish), Boston, Mass. ... 6
Richardson, J. O., Philadelphia ... 5
Ross, James W., Chicago, Ill. ... 4
Wessels Ed. J., 17 Cedar, N. Y. ... 4
Williamson James & Co., 69 Wall N. Y. ... 4

Iron, Sheet. *Manufacturers of.*
Jersey City Galvanizing Co., Jersey City, N. J. ... 4
Lefferts, Marshall & Co., 90 Beekman, N. Y. ... 4
Wood W. D. & Co., Pittsburgh, Pa. ... 4

Iron, Steel and Nails.
Morris, Wheeler & Co., 14 Cliff, N. Y. ... 5

Lanterns, *Manufacturers of.*
Dietz R. E., 54 and 56 Fulton, N. Y. ... 44
Howard & Morse, 45 Fulton, N. Y. ... 2

Lathes, Pulley Blocks, Drills.
Harrington E. & Son, Philadelphia, Pa. ... 43

Lawn Mowers.
Chadborne & Coldwell Mfg. Co., Newburg, N. Y. ... 33

Lemon Squeezers.
Kyser & Rex, Frankfort, Philadelphia ... 25
Onderdonk R., 405 Grand, N. Y. ... 27
Ripley Mfg. Co., Unionville, Conn. ... 27

Levels.
Comstock Wm. T., 6 Astor Place, N. Y. ... 28

Locks and Knobs.—*Manufacturers of.*
Durrie & McCarty, 97 Chambers, N. Y. ... 25
Hillebrand & Wolf, 110 S. 8th, Philadelphia ... 40
Quackenbush J. E. & Son, 535 8th av., N. Y. ... 29
Romer & Co., Newark, N. J. ... 12
Smith & Egge Mfg. Co., Bridgeport, Conn. ... 39
Trenton Lock and Hardware Co., Trenton, N. J. ... 16
The Charles Parker Co., Meriden, Conn. ... 29
Whipple Mfg. Co., Cleveland, O. ... 13

Lubricator Cups.
Detroit Lubricator Co., Detroit, Mich. ... 18

Machinery.
Ault John, New Haven, Conn. ... 38
Bliss, E. W., 167 Plymouth, Brooklyn ... 42
Dodge, Heller & Lyons, Newark, N. J. ... 37
Forsaith S. C. & Co., Manchester, N. H. ... 42
Garvin E. E. & Co., 130 Centre, N. Y. ... 42
Peerless Punch and Shear Co., 38 W. Dey, N. Y. ... 43
Pittsburgh Mfg. Co., Pittsburgh, Pa. ... 41
Purdy Machine Co., Cleveland, O. ... 42
Sellers Wm. & Co., Phila., and 79 Liberty, N. Y. ... 43
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NEW YORK WHOLESALE PRICES, June 27, 1883.

METALS.

IRON.—DUTY. Bars, 1 to 1¼c. ₩ lb. Sheet, Band Hoop and Scroll, 1¼ to 1¾c. ₩ lb; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ₩ ton; Polished Sheet, 3c. ₩ lb; Wrought Scrap, $8 ₩ ton; Cast Scrap, $6 ₩ ton. Railroad, 70c. ₩ 100 lb. Boiler and Plate, 1¾c. ₩ lb

American Iron

Foundry, No. 1	₩ ton	$21.00 @ 22.50
Foundry, No. 2	₩ ton	19.00 @ 20.00
Gray Forge	₩ ton	18.50 @ 19.00

Scotch Iron.

Eglinton	₩ ton	21.00 @ 21.50
Carnbroe	₩ ton	22.00
Coltness	₩ ton	24.50 @ 24.75
Shotts	₩ ton	24.00
Glengarnock	₩ ton	22.50 @ 23.00
Gartsherrie	₩ ton	24.00
Langloan	₩ ton	24.00
Summerlee	₩ ton	24.00

Rails.

Steel, at Eastern mills	₩ ton	38.00
Old Rails T's		22.00 @ 23.00

Scrap.

Wrought, ₩ l. ton from ship and yard.... 22.00 @ 25.00

Bar Iron from Store.

Common Iron

⅝ to 1 in. round and square	₩ lb	2.10 @ 2.20c
1 to 6 in. x ⅝ to 1 in.	₩ lb	2.10 @ 2.20c

Refined Iron:

⅝ to 2 in. round and square	₩ lb	$2.30 @ 2.40c
1 to 6 in. x ⅝ to 1 in.	₩ lb	2.30 @ 2.40c
1 to 6 in. x 1¼ and 5-16	₩ lb	2.50 @ 2.60c
Rods—⅜ and 11-16 round and square	₩ lb	2.40 @ 2.50
Bands—1 to 6 x 5-16 to No. 12	₩ lb	2.70 @ 2.80c
Norway Nail Rods		5¼ @ 5½c

Sheet Iron.

	Common American	B. G. American.
Nos 10 to 16	₩ lb 3¼ @ 3½c	4½c
17 to 20	₩ lb 3½ @ 3¾c	4¾c
21 to 24	₩ lb 3¾ @ 4 c	4¾c
25 to 26	₩ lb 4 @ 4¼c	5 c
27	₩ lb 4¼ @ 4½c	5 c
28	₩ lb 4½ @ 4¾c	5¼c
	B. B.	2d qual.
Galvanized, 10 to 20	₩ lb 7¼c	6 c
Galvanized, 21 to 24	₩ lb 7¾c	6¼c
Galvanized, 25 to 26	₩ lb 8¼c	7 c
Galvanized, 27	₩ lb 9 c	7½c
Galvanized, 28	₩ lb 9½c	8 c
Patent Planished	A.. ₩ lb 10½c	B. 9½c
Russia	₩ lb 13 @ 14c	
American Cold Rolled	₩ lb	C @ 7½c

COPPER.—DUTY: Pig, Bar and Ingot, 6c; Old Copper 4c ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

American Ingot ₩ lb See Trade Report.

SHEATHING BRAZIERS COPPER, BOLTS, &C.

Braziers' Copper, ordinary sizes, 16 oz. per sq. ft., and over ₩ lb 26c

Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz., ₩ sq. ft. ₩ lb 28c

Brazers' Copper, 10 oz. and 12 oz., ₩ sq. ft. ₩ lb 30c

Braziers' Copper, Lighter than 10 oz. ₩ sq. ft. ₩ lb 32c

Circles less than 24 in. in diameter ₩ lb 28c

Circles 24 in. diameter and over ₩ lb 31c

Segment and Pattern Sheets ₩ lb 28c

Locomotive Fire Box Sheets ₩ lb 26c

Sheathing Copper, over 12 oz. ₩ sq. ft. ₩ lb 24c

Bolt Copper ₩ lb 26c

Copper Bottoms ₩ lb 31 @ 26c

No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the sq. ft.

TINNING.

Sheets 14 x 48 ₩ sheet 8c

All other size Sheets, 23c ₩ sq. ft.

For tinning both sides, double the above amount.

O'NEILL'S PATENT PLANISHED COPPER.—Net.

14x48.

14 and 16 oz. and heavier	₩ lb 37c
12 oz. and lighter	₩ lb 40c

By the case. ₩ lb 36c ₩ lb 39c

Boiler Sizes.

7 in., 14x52. 8 in., 14x66. 9 in. 14x60.

14 and 16 oz. and heavier ₩ lb 39c By the case. ₩ lb 38c

(And all sizes not over 20 in. wide.)

24x48 & 30x60.

14 and 16 oz. and heavier	₩ lb 41c
08	₩ lb 44c

SHEATHING METAL.

Yellow Sheathing metal ₩ lb 20 @ 22c

BRASS.

Brown & Sharpe's Gauge the Standard for Metals. Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis. 20 %. June 10, 1880.

Cash prices for Roll and Sheet Brass. For less quantities than 100 lbs add 30. ₩ lb.

HIGH BRASS.

All Nos. not thinner than No. 28, wider than 2 in., not wider than 14 in. 30c

All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive 35c

All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive 38c

4c. ₩ lb advance on each No. above Nos. 28 to 36, inclusive.

All Brass thinner than No. 36 is Platers' Brass, at 43c

Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 37c

Printers' Rules 45c

Sheets wider than 30 in. and under 40 in. 47c

" 40 in. and over 50c

Circular Sheets, in diam. from 4 in. to 14, inclusive 40c

" over 14 " 20, " 45c

" " 20 " 30, " 49c

" " 30 " 40, " 55c

" " 40 in. 59c

LOW BRASS.

Four cents ₩ lb more than High Brass

Gilding Metal, 8c ₩ lb more than High Brass.

Platers' or Gold Metal { In Bars 48c; Sawed 51c; Planed or Polished 54c

FOR SLITTING.

Metal, in width 1 in. to ⅛ in. to No. 28, inclusive, 10 ₩ lb advance.

Metal, in width 2 in. to 1 in thinner than No. 28, 20 ₩ lb advance.

Metal, in width 1 in. to ⅛ in thinner than No. 28, 30 ₩ lb advance.

Metal in width ¼ in. to ¼, inclusive, not thinner than No. 28, 20 ₩ lb advance.

Metal in width ½ in. to ¼ thinner than No. 28, 50 ₩ lb advance.

Metal, ¼ in. in width and less, 100 ₩ lb advance.

Any of the above widths cut to particular lengths, add 70 ₩ lb.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire
4 per cent., 12 inch to No. 26	$0.52	$0.70
6 " " "	.56	.76
8 " " "	.64	.86
9 " " "	.74	1.03
10 " " "	.85	1.12

German Silver Sheets over 12in. Wide and weighing more than ½ lb., 8c ₩ lb.

Advance 3c. for each additional inch in width above 12 in. and 2c. ₩ lb on each No. thinner than Nos. 26 to 2, inclusive.

All German Silver thinner that No. 36 is Platers', at 40c. ₩ lb additional.

German Silver Scrap, one-half less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 0 to 2c	$0.33	$0.27	$0.48
No. 3	.36	.40	.46
No. 22	.37	.41	.47
No. 23	.38	.42	.48
No. 24	.40	.44	.50
No. 25	.43	.47	.53
No. 26	.45	.49	.55
No. 27	.48	.52	.58
No. 28	.53	.56	.63
No. 29	.58	.59	.66
No. 30	.58	.62	.72
No. 31	.62	.66	.78
No. 32	.66	.70	.84
No. 33	.70	.74	.93
No. 34	.74	.78	1.03

Spring Wire 2c ₩ lb advance

Flat, Square and Half-Round Wire 5c ₩ lb advance on Round Wire.

Fancy Wire not less than 10c ₩ lb advance on Round Wire.

Brass Rods, No. 8 and larger, not less than 2 feet lengths, 48c.

Wire straightened and cut smaller than No. 8 and not less than 2 feet lengths, 43c.

Wire and Rods less than 2 feet lengths, special rates.

Twelve cents per lb extra for spooling on 1 lb spools No 36.

MISCELLANEOUS.

Brass Pail Ears	$0.20
Brass Door Rail	.42

SCRAP.—Net.

High Brass Scrap	12c
Low Brass Scrap	10c
Gilding	10c

Turnings, Filings and Chips sell the price of Scrap.

Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis. 30 %.

	₩ lb
Plain to No 20 inclusive above ¼ in. to 3 in.	$0.42
Plain above 2 in.	.53

Nos 21, 22, 23, two cents advance on List for each Number.

Nos. 24, 25, 26, four cents advance on List for each Number.

All Nos. No. 26, special rates.

Plain, ¼ inch .78

Plain, 3-16 inch 1.10

Plain, ⅛ inch 1.00

All Mandrel Drawn Tubes, 5 cents advance on List Prices.

Fancy Tubing to No. 20 50

English, Scotch and Extra Patterns Fancy Tubing to No. 20 55

Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List

Add two cents, ½ cent for each additional cutting under 2 feet

All Mandrel Drawn Tubes under ¾ in. 25 cents per pound advance.

ZINC TUBING—dis. 25 %.

Plain	27
Fancy	33
Scotch and Extra Patterns	36

GERMAN SILVER TUBING.—dis 25 %.

4 Per cent	.80
6 Per cent	.90
9 Per cent	1.00
12 Per cent	1.20
15 Per cent	1.35
16 Per cent	1.15
18 Per cent	1.10
20 Per cent	1.60

STEEL.—DUTY: Bars, Ingots, Sheets and Coils, valued at 7c ₩ lb, or under, 2½c; over 7c and not above 11, 3c ₩ lb; over 11, 3½c ₩ lb, and 10 % ad val. Railway Bars, 1¼c ₩ lb. Railway Bars, in part Steel, 1c ₩ lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

For American Steel see quotations under heading of Pittsburgh.

English Steel.

Best Cast	₩ lb 15½c
Extra Cast	₩ lb 16½c
Circular Saw Plates	₩ lb 16c
Round Machinery, Cast	₩ lb 10c
Swaged, Cast	₩ lb 18c
Best Double Shear	₩ lb 15½c
Blister, 1st quality	₩ lb 13c
German Steel, Best	₩ lb 11c
2d quality	₩ lb 10c
3d quality	₩ lb 9c
Sheet Cast Steel, 1st quality	₩ lb 15½c
2d quality	₩ lb 14½c
3d quality	₩ lb 12½c

ANTIMONY See Trade Report

LEAD.—DUTY: Pig, $2 ₩ 100 lb Old Lead, 1½c ₩ lb Pipe and Sheet, 2½c ₩ lb.

American	4.65 @ 4.70c
Bar	6c
Pipe	6¼c, dis 10 %
Tin Lined Pipe	11c, dis 10 %
Sheet	7½c, dis 10 %
Shot	Drop 7c, Buck. 8c
Chilled Shot	8c

BABBITT METAL.

N. P. U.	₩ lb 8c

A. 28c: B. 24c: C. 14c.

TIN.—DUTY. Plates, Sheets Tagger and Terne, 1.10 ₩ lb; Electro-galvanized Plates, 2c ₩ lb; Manufactures of, not enumerated, 35 per cent. ad val. Bars, Block and Pigs free.

Banca	₩ lb 23½c
Straits	₩ lb 22½c
English	₩ lb 21 c

TIN PLATES.

I C 10x14 } I C 14x20 } Prime Charcoal	$6.25 @ 6.75
Second quality	$5.87½ @ 6.25
I C 12x12 Prime Charcoal	6.50
I X 10x14 } I X 14x20 } Prime Charcoal	7.75 @ 8.00
Second quality	$7.25 @ 7.50
I X 12x12, Prime Charcoal	8.25
D C 12½x17, Prime Charcoal	5.75
D X 12½x17, Prime Charcoal	7.25
For each additional X add	1.50

COKE TIN PLATE.

	Best.	Ordinary.
I C 10x14 } I C 14x20 }	$4.50	$4.15 @ 5.40
I C 12x12	5.75	5.40 @ 5.50

TERNE PLATE.

	Prime Char.	2d Qual.	Coke.
I C 14x20	$4.50 @ 5.62½	5.25	5.12½
I X 14x20	7.00	....	....
I C 20x28	10.75 @ 11.25	10.40	10.00 @ 10.25
I X 20x28	15.00	....	....
I C 20x200	14.00	....	....
I C 14x20 M. F. Brand			$7.75

SOLDER—½ & ½ 14c

Extra .13½c

No. 1 .12 c

SPELTER.—DUTY: In Pigs, Bars and Plates, $1.50 ₩ 100 lb.

American, cash	5.00 @ 5.25

ZINC.—DUTY Pig or Block, $1.50 ₩ 100 lb: Sheet 2½c ₩ lb.

Sheet, Cask	6¼ @ 6½c
Sheet, Open	6¾ @ 7c

Paper Stock, &c.

(Dealers' Selling Prices.)

	Cents ₩ lb
White ShirtCuttings, No. 1	6¼ @ 7
White Shirt Cuttings, No. 2	5 @ 5¼
Mill Assorted Whites	4¼ @ 4½
Unbleached Muslins	6¼ @ 6¾
City Whites, No. 1	4¾ @ 4¾
New Canton Flannels	6¾ @ 6¾
New Seconds, light	3¼ @ 3½
New Seconds, dark	2¾ @ 3
No. 2 Whites	2½ @ 2¾
Cotton Canvas	4½ @ 4¾
Linen Canvas, No. 1	4¾ @ 5
Seconds, City No. 1	1¾ @ 2
Seconds, City No. 2	1¾ @ 1¾
Colors, per cwt	70 @ 80
Manila Rope	3½ @ 3¾
Manila Rope, Tarred	2½ @ 2¾
Gunny Bagging, No. 1	2 @ 2¼
Gunny Bagging, No. 2	1¾ @ 1¾
Kentucky Bagging	4½ @ 4¾
Burlap Bagging, No. 1	2¾ @ 2¾
Tar Shakings	2¾ @ 2¾
Hemp Twine Stock	4½ @ 4¾
Hard White Shavings, No. 1	4 @ 4¼
Soft White Shavings, No. 1	3¼ @ 3½
White Shavings, No. 2, soft	3 @ 3
Mixed Shavings, part white	2½ @ 3
Ledger and Writing	3 @ 3¼
Solid Stock	2½ @ 2¾
Book Stock, No. 1, light	1¾ @ 1¾
Old Newspapers	1¼ @ 1¼
Pure Manilas	1¾ @ 2
Bogus Manilas and Hardwares	¾ @ 1
Commons per 100 lbs	60 @ 70
Binders' Board Cuttings	¾ @ 1
Straw Board Cuttings per cwt	75 @ 80

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters	₩ lb 22 @ 25c
Black Lamp, Ordinary	₩ lb 0c
Black Ivory Drop, fair	12 @ 15c
Black Ivory Drop, best	23c
Black Paint, in oil	kegs 8c; asst'd cans, 11c
Blue Prussian, fair to best	40 @ 55c
Blue Prussian, fair to best, in oil	45 @ 55c
Blue Chinese dry	70c
Blue Ultramarine	18 @ 30c
Brown, Spanish	11½c
Brown, Van Dyke	10 @ 12c
Green, Chrome	15 @ 23c
Green, Chrome, in oil	14 @ 18 @ 25c
Green, Paris	good, 20c; best, 25c
Green, Paris, in oil	good, 30c; best, 45c
Iron Paint, Bright Red	₩ lb 2½c
Iron Paint, Brown	₩ lb 1½c
Iron Paint, Purple	₩ lb 3 c
Iron Paint, Ground in oil, Bright Red	₩ lb 6½c
Iron Paint, Ground in oil, Red	₩ lb 5½c
Iron Paint, Ground in oil, Brown	₩ lb 5½c
Iron Paint, Ground in oil, Purple	₩ lb 6 c
Mineral Paints	2 @ 4c
Orange Mineral	10c
Red Lead, American	7c
Red Venetian (Eng.) dry	$1.6c @ $1.7c
Red Venetian, in oil	asst'd cans, 11c; kegs, 8c
Red Indian dry	9 @ 12c
Rose Pink	10 @ 13c
Sienna, American, Raw, powdered	4c
Sienna, Burnt, powdered	4½c
Sienna, Burnt, in oil	10 @ 16 @ 20c
Sienna, Raw	11 @ 15 @ 25c
Umber, Burnt, powdered	4 @ 8c
Umber, Burnt, in oil	9 @ 12 @ 16c
Umber, Raw, powdered	3½ @ 7½c
Umber, Raw, in oil	10 @ 16 @ 20c
Vermilion, Chinese	90c
Vermilion, English	45 @ 48c
Vermilion, American, Common	14c
White Lead, American, pure dry	6½ @ 6¾c
White Lead, American, pure in oil	6½ @ 7c
White, Paris, English, prime	in bbls. 2 @ 2½c
Yellow Ochre, French	$1.75
Yellow Ochre, French, in oil	asst'd cans, 11c; kegs, 8c
Yellow Ochre, Vermont	in casks, 13c
Yellow Chrome	17 @ 27c
Yellow Chrome, in oil	14 @ 18 @ 25c
Zinc White, American No. 1, dry	5 @ 8c
Zinc White, American No. 1, in oil	9c
Zinc White, French (Paris) dry	8 @ 10c
Zinc White, French, in oil	10 @ 11c

Oils.

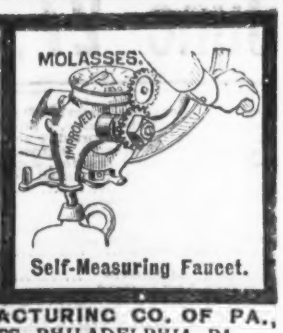
Linseed Raw, in casks and bbls	56c @ 57c
Linseed Boiled, in casks and bbls	59c @ 60c
Linseed, Calcutta	58 @ 59c
Bleached Whale	₩ gal. 65c
Bleached Sperm	₩ gal. $1.12
Bleached Elephant	72c
Signal	80c
Prime Lard	84c
No. 1 Extra	73c
West Virginia	80 @ 85c
Drilling	40c
Miners' Oil	37c @ 42c
Fish Oil, pressed	47c @ 49c
Neatsfoot	75 @ 80c
Tallow	70c @ 75c
Empire Cylinder Oil	65c
Machinery	40c
Engine	45c

Sundries.

Asphaltum Cuban	5c @ 8c
Asphaltum Egyptian	85c @ 90
Benzine	₩ gal. 9c @ 11c
Chalk	50c
Chalk, Block	75

Fruit, Wine & Jelly Press.

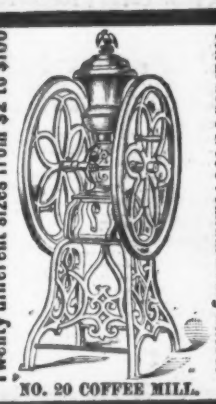
SAUSAGE STUFFER.



Self-Measuring Faucet.

ENTERPRISE MANUFACTURING CO. OF PA.,
THIRD & DAUPHIN STS, PHILADELPHIA, PA.

Twenty different sizes from $2 to $100



Awarded First Premium Everywhere.

NO. 20 COFFEE MILL.

MRS. POTTS'
Cold Handle Double Pointed Sad Irons.

Tincture Presses,
Self-Weighing
Cheese Knife,
Cork Presses.

THE BEST
ARE THE
CHEAPEST.

SOLD BY HARDWARE DEALERS.
SEND FOR ILLUSTRATED CATALOGUE, FREE.

Smoked Beef Shaver.

SAUSAGE CUTTER.

Bung Hole Borer.

Tobacco & Root Cutter.

THE STANLEY WORKS,

MANUFACTURERS OF

Wrought Iron Butts, Hinges

AND

DOOR BOLTS,

Plain, Japanned, Bronzed and Plated.

FACTORIES: New Britain, Connecticut.

WAREHOUSE: 79 Chambers St., New York.

Bemis & Call Hardware & Tool Co.

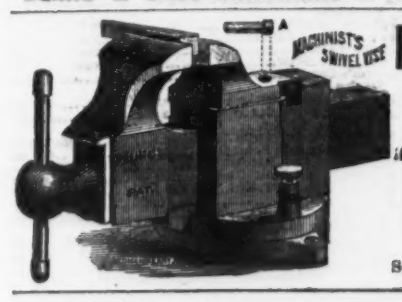
This Wrench can be furnished with Briggs' Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench thus making a combination which has no equal.

For Circulars and Price List, address

BEMIS & CALL HARDWARE & TOOL COMPANY, Springfield, Mass.



PRENTISS' PAT. VISES,

Adjustable Jaw.

Stationary or Pat. Swivel Bottoms.

ADAPTED TO ALL KINDS OF VISE WORK. ALSO

"PEERLESS" SWIVEL PIPE GRIP,

FITS ANY VISE. SOLD BY THE TRADE.

PRENTISS VISE CO.,

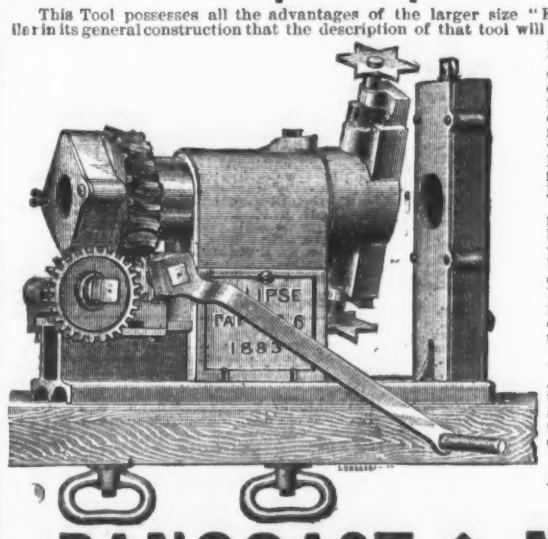
23 Dey Street, New York.

SOLE PROPRIETORS. SEND FOR CIRCULAR.

THE

"Junior" Eclipse Pipe-Cutting Machine

This Tool possesses all the advantages of the larger size "Eclipse" Machine, and is so similar in its general construction that the description of that tool will serve for the "Junior" also. It meets the requirements of those who have use for a Screwing Machine light enough to be readily carried about, sufficiently powerful in its gearing (18 to 1) to work easily, and strong enough to bear rough usage. All of these points, with the very important one of MODERATE COST, are to be found in the **"Junior" Eclipse Machine.**



It will cut off and thread Pipes from ⅛ to 2-inch, inclusive; can be erected on any fence, box or plank in five minutes by simply boring two ¾ holes, and weighs, complete, about 125 pounds. It has no complicated parts and nothing to break or get out of order, and will do the work of a tool costing twice its price.

We offer it, as also the large size "Eclipse" (cutting pipes 2½ to 4 inch), with the understanding that if not found satisfactory after a fair trial it may be returned to us within thirty days and the purchase money will be refunded.

PRICE, Complete with Dies 1-4 to 2 inches, $60.

PANCOAST & MAULE,

243 & 245 So. Third St., PHILADELPHIA.

MELLERT FOUNDRY & MACHINE CO., LIMITED.

(Works Established at Reading, Pa., in 1848.)

MANUFACTURERS OF

Also Flange Pipe, for Steam or Water, of all sizes used. Special Castings, such as Branches, Bends, Reducers, Sleeves, &c. Stop Valves, Fire Hydrants, Retorts, Lamp Posts, &c.

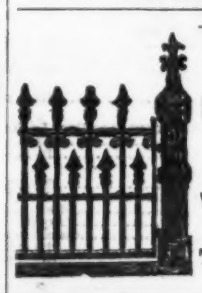
The Improved Canada Turbine Water Wheel.

MACHINERY AND CASTINGS FOR

Furnaces, Rolling Mills, Mining Pumps, Hoists, &c.

CAR CASTINGS, GIRDERS, COLUMNS, BRACKETS, IRON RAILING, &c., &c.

GENERAL OFFICE AT READING, PA.



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FOR RESIDENCES, PUBLIC BUILDINGS, PARKS, &c., &c.

Bank and Office Railing, Window Guards,

IRON AND BRASS BEDSTEADS,

For Prisons, Asylums, Hospitals, Jails, &c., absolutely vermin-proof.

WIRE AND IRON WORK OF EVERY DESCRIPTION.

Send for Catalogue, stating your wants, and we will make estimate. Mention this paper.

THE E. T. BARNUM WIRE AND IRON WORKS,
DETROIT, MICH., U. S. A.

Henderson's Patent Gas Furnace,

Realizes Perfect Utilization of Coal as Fuel,

PRODUCES INGOT IRON FREE OF CARBON and INGOT STEEL OF ALL GRADES OF CARBON,

From every kind of Pig Iron or Pig and Wrought Scrap Iron.

Apply to JAMES HENDERSON,

BELLEFONTE, CENTRE CO., PA.

THE CLARK M'F'G CO.

MANUFACTURERS OF BUILDERS' HARDWARE

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CHAMPION **HOG RINGER** RINGS and HOLDER.

Only double Ring ever invented. The only Ring that will effectually keep Hogs from rooting. No sharp points in the nose.

EAGLE BILL **CORN HUSKER**

is the best Husker in the market. Farmers say it is the best. Use no other.

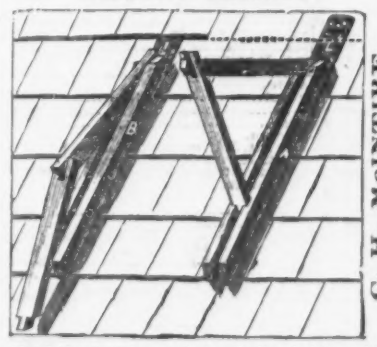
BROWN'S **HOG AND PIG RINGER and RINGS.**

Only single Ring in the market that closes on the outside of the nose. No sharp points in the nose to keep it sore.

Ringers 75c. Rings, 40c. 100. Holders, 75c. Huskers, 15c.

CHAMBERS, BERING & QUINLAN, Exclusive Manufacturers, Decatur, Ill.

CALWELL'S PATENT ADJUSTABLE ROOFING BRACKET.



C. H. McINTIRE, Reading, Mass. P. O. Box 390.

The letter "A" in cut shows the Bracket in position for shingling; "B," folded ready for packing. "L" is an iron plate riveted to the Bracket, with slots for fastening to the roof. This Bracket takes a staging board 14 inches wide. It saves lumber, nails and time, and gives perfect satisfaction. Price, $8.00 per dozen. Liberal discount to the trade. *Send 50 cents for sample Bracket, with circular and references, for a trial.*

EXCELSIOR AND CLIPPER LAWN MOWERS

GUARANTEED BEST & CHEAPEST

LARGE REDUCTION IN PRICE

HAND MOWERS 10 TO 20 IN.

HORSE MOWERS 25 TO 40 IN.

CHADBORN & COLDWELL MANUF'G CO. NEWBURGH, N. Y.

Send for Circular & Price-List.

PERFECTION WINDOW CLEANER.

Simple, Useful & Durable.

Saves 75 per cent. in time and labor over any other method.

This is the only perfect Glass and Window Cleaner yet devised. It has

TWO RUBBER STRIPS,

One an elastic cleaning edge, the other a yielding cushion or support. Has hollow iron handles to attach to pole.

We own all the Patents

embracing **any or all** of these principles, and shall prosecute parties found infringing, either by manufacture or sale of any other **Rubber Window Cleaner.**

Buy only the PERFECTION,

and you escape all infringements. See that our stamp and dates of patents are on every cleaner.

PERFECTION WINDOW CLEANER CO.,

232 La Salle St., CHICAGO, ILL.

EMPIRE NUT CO.
PITTSBURGH, PA.

Hot Pressed **NUTS.**

Small Sizes a Specialty.

Grindstones, Emery, &c.

Walter R. Wood GRINDSTONES.

Berea, O., Nova Scotia, & other brands.

283 and 285 Front Street, New York.

GEO. CHASE,

The largest manufacturers in the world of

OIL  STONE

Of all description.

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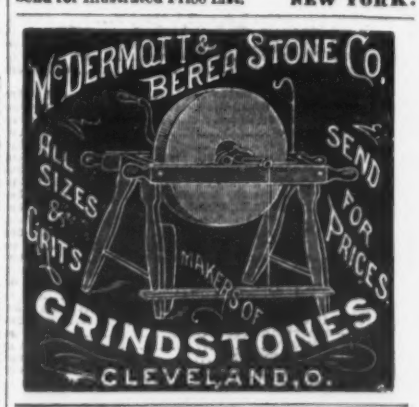

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Of All Kinds.

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Importe and Dealers in all kinds of

GRINDSTONES,

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Stones for Machinists, Carpenters, Farmers and Glass Cutters constantly on hand and cut to order.

New York Wholesale Prices, June 27, 1883.

HARDWARE.

Anvils.
Eagle Anvils American .... ℘ ℔ 10c—dis 20 %
Wright's .... 11c @ 11½c
Armitage's Mouse Hole .... 9½c @ 9¾c
Armitage's Mouse Hole (extra quality) 11½
Trenton 10½c
Wilkinson's 10½c

Anvil Vise and Drill.
Millers Falls Co., $18.00 .... dis 20 %
Cheney Anvil and Vise .... dis 33⅓ %

Augers and Bits.
Conn. Valley Mfg. Co.
Douglass Mfg. Co.
C. E. Jennings & Co.
Humphreysville Mfg. Co.
Ives
Beecher (French, Swift & Co.)
Griswold
Nobles Mfg. Co.
Snell Mfg. } dis 45&10 % from list of Jan. 7, 1880.
Watrous & Co. Extension Lip .... dis 35 %
Cook's Douglass Mfg. Co .... dis 40&10 %
Patent Solid Head .... dis 30 %
Lewis' Patent Single Twist .... dis 45 %
Russell Jennings' Auger, Dowel, Machine-Dowel and Hand Rail Bits .... dis 10&10&10 %
Russell Jennings' Augers .... dis 16⅔&10&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers .... dis 25&10&10&10 %
Imitation Jennings' Bits .... dis 50 %
Ives' "Jennings'" Bits .... dis 40&10 %
Snell Mfg. Co.'s Jennings' Bits .... dis 40 %
Expansive Bits, Clark's, small, $18; large, $26 .. dis 25 %
Expansive Bits, Ives' .... $20 @ $30—dis 33⅓&10 %
Expansive Bits, Blake's .... $20—dis 40 %
Expansive Bits, Derby, $17 and $26 .... dis 40 %
Hollow Augers, Ives
Hollow Augers, French, Swift & Co. } dis 25 %
Hollow Augers, Douglass' .... 25 %
Hollow Augers, Bonney's Adjust. ℘ dz. $48—dis 25&10 %
Hollow Augers, Stearns' Adjust. ℘ dz. $48—dis 20&10 %
Hollow Augers, Ives' Expansive, each $4.50—dis 30&10 %
Hollow Augers, Universal Expan., each $4.50—dis 20 %
Wood's .... dis 25 %
Gimlet Bits .... $7.50 ℘ gross, dis 50 %
Gimlet Bits, Diamond .... ℘ doz. $1.10, dis 25&10 %
Gimlet Bits "Bee" .... dis 25 %
Double Cut Gimlet Bits, Shepardson's .... dis 40 %
Double Cut Gimlet Bits, Ct. Valley Mfg. Co. dis 30&10 %
Double Cut Gimlet Bits, Hartwell's .... dis 60 %
Double Cut Gimlet Bits, Douglass' .... dis 40 %
Double Cut Gimlet Bits, Ives' .... dis 50 %
Morse's Bit Stock Drill .... dis 25&10 %
Holtz Bit Stock Drills .... dis 25&10 %
L'Hommedieu's Ship Augers .... dis 15 %

Awl Hafts.
Sewing, Brass Ferrule .... $3.50 ℘ gross—dis 40&10 %
Patent Sewing, Short .... $1.00 ℘ doz.—dis 40&10 %
Patent Sewing, Long .... $1.20 ℘ doz.—net
Patent Peg, Plain Top .... $10.00 ℘ gross—dis 40&10 %
Patent Peg, Leather Top .... $12.00 ℘ gross—dis 40&10 %

Awls, Brad Sets, &c.
Awls, Sewing, Common .... ℘ gross $1.70—dis 25&10 %
Awls, Shouldered Peg .... ℘ gross $2.45—dis 25&10 %
Awls, Patent Peg .... ℘ gross 69c—dis 25&10 %
Awls, Shouldered Brad .... ℘ gross $2.70—dis 25&10 %
Awls, Handled Brad .... $7.50 ℘ gross—dis 25&10 %
Awls, Handled Scratch .... $7.50 ℘ gross—dis 25&10 %
Awls, Socket Scratch .... $1.50 ℘ gross—dis 10&10 %
Brad Sets, Aiken's .... ℘ doz $12.00—dis 45&10 %
Millers Falls Adj. Tool Hdles .... ℘ doz $12—dis 25 %
Brad Sets, No. 42, $10.50; No. 43, $12.50 .... dis 70&10&5 %
Brad Sets, Stanley's Excelsior, No. 1, $9.60 .. dis 30&10 %
Brad Sets, Stanley's Excelsior, No. 2, $4.80 .. dis 30&10 %
Brad Sets, Stanley's Excelsior, No. 3, $7.80 .. dis 30&10 %

Axes.
Single Bit, 4½ to 5½ and under .... ℘ doz 8.00 net
Single Bit, 4½ to 6 and over .... ℘ doz $8.50 net
Single Bit, beveled .... 50c ℘ doz advance
Double Bit, 4½ to 5½ and under .... ℘ doz $15.00 net
Double Bit, 4½ to 6 and over .... ℘ doz $16.00 net
Double Bit, beveled .... $1.00 ℘ doz advance

Axle Grease.
Frazer's .... ℘ ℔ 6c

Axles.
Standard list .... dis 45 %

Balances.
Spring Balances .... dis 33⅓ %

Bells.
Hand, Light Brass .... dis 65&10 @ 70 %
Hand, Extra Heavy .... dis 45 %
Hand, White Metal .... dis 60 %
Hand, Silver Chime .... dis 20&10 %
Hand, Globe (Cone's Patent) .... dis 25&10 %
Gong, Abbe's .... dis 20&10 %
Gong, Yankee .... dis 30&10 %
Gong, Barton's .... dis 30&10 %
Crank, Taylor's .... dis 25&10 %
Crank, Brooks' .... dis 50&10&2 %
Crank, Cone's .... dis 10 %
Crank, Connel's .... dis 15&10 %
Lever, Sargent's .... dis 55&10 %
Lever, Taylor's Bronzed or Plated .... net
Lever, Taylor's Japanned .... dis 25&10 %
Lever, R. & E. M. Co.'s .... dis 50&10&2 %
Lever, Reading .... dis 25&10&10 %
Pull, Brook's .... dis 50&10&2 %
Pull, Western .... dis 25&10 %
Call .... dis 25 %
Cow, Common Wrought .... dis 55&10 %
Cow, Western .... dis 20&10 %
Cow, Western, Sargent's list .... dis 55&10 %
Cow, Kentucky "Star" .... dis 20&10 %
Cow, Kentucky Sargent's list .... dis 55&10 %
Cow, Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 4 5 6 Hog
$12.00 10.00 9.00 8.00 7.00 5.00 3.50 2.50 5.00 } dis 60 %
Cow, Texas Star .... dis 40&10 %

Bellows.
Blacksmiths' Common .... dis 45 %
Blacksmiths' Extra Pittsburgh Pattern .... dis 20 %
Molders' .... dis 25 %
Hand Bellows .... dis 20 %

Belting, Rubber.
Belting and Packing Co .... dis 50 %

Bit Holders.
Extension, Barber's .... ℘ doz $15.00—dis 40&5 %
Extension, Ives' .... ℘ doz $15.00—dis 40 %
Diagonal .... ℘ doz $24.00—dis 40 %
Angular .... ℘ doz $24.00—dis 40&5 %

Blind Adjusters.—Domestic .. ℘ doz $3.00—dis 30 %
Excelsior .... ℘ doz $16.00—dis 50&10&2 %

Blind Fasteners.
Mackrell's .... ℘ doz pairs, $1.00 dis 20&10 %
Van Sand's Screw Pattern .... $9 ℘ gro. dis 10&2 %
Van Sand's Old Pattern .... $9 ℘ gro. dis 10&2 %
Washburn's Old Pattern .... $9 ℘ gro. net
Merriman's .... new list, net
Salisbury & Austin, No. 2008 .... $9 per gro. net
Security Gravity .... $9 per gross. net

Blind Staples.
Bar bed, ⅜ in. and larger .... ℘ ℔ 11c net
Bar bed 5/16 in .... ℘ ℔ 13c net

Blocks.
Penfield Block Co., L. R. and L. Strap'd .... dis 35 %
Penfield Block Co., W. L. C. bushed .... dis 35 %
Penfield Block Co., W. I. all steel roll'r .... dis 20 %
Penfield Block Co., L. & I Sheaves .... dis 35 % } New List.
Stanley Rule & Level Co.'s .... dis 40&10 %

Bolts.
Cast Iron Barrel Shutter, &c .... dis 55&10 %
Cast Iron Chain (Sargent's list) .... dis 65&10 %
Ives' Patent Door Bolts .... dis 55&10 %
Wrought Barrel .... dis 55&10 %
Wrought Square .... dis 55&10 %
Wrought Shutter, all Iron, Stanley's list .... dis 50&10 %
Wrought Shutter, Brass Knob, Stanley's list dis 50&10 %
Wrought Shutter, Sargent's list .... dis 55&10 %
Wrought Sunk Flush, Sargent's .... dis 75&10 %
Wrought Sunk Flush, Stanley's .... dis 40&10 %
Wrought B. K. Flush, Com'n Stanley's .... dis 55&2½ %
Carriage and Tire, Common .... dis 80@80&10 %
Carriage and Tire, Philadelphia, new list .... dis 70 %
Carriage and Tire, Philadelphia Pattern .... dis 70 %
Union Carriage .... dis 70 %
R. B. & W. Carriage (old list) .... dis 65 %
Tire, Am. Screw Co.'s, Phila .... dis 75 %
Tire, "Bay State" .... dis 80&5 %
Tire, R. B. & W., new list .... dis 75&10 %
Stove—American Screw Co.'s .... dis 40 %
Stove, R. B. & W .... dis 40 %
Stove, R. & E. Mfg. Co .... dis 40 %
Plow .... dis 50 %
Plow, R. B. & Co .... dis 40 %
Machine .... dis 65&10 %
Bolt Ends .... dis 60&10 %

Borax .... 10c ℘ ℔ net

Boring Machines. Upright Angular
First quality, no Augers .... $6.50 $6.75 .. dis 40@50 %
Phillips, with Augers .... 7.00 7.50 .... net
Jennings & Co., no Augers .... 5.50 6.75 .... dis 40 %
Saunders' Patent, Regular Bed, $6.00 .... dis 20 %
Saunders' Patent, Extra Bed, $6.50 .... dis 20 %

Boxes.
Interchangeable Shelf Boxes .... dis 20 %

Braces.
Q. S. Backus .... dis 50@60 %
Wilson Mfg. Co .... dis 10 %
Barber's .... dis 40&5 %
Spofford's Patent .... dis 50&5 %
Ives' Patent Braces .... dis 55@55&5 %
Common Ball (American) .... dis 55 %
Amidon's .... dis 50 %
Barker's Imp'd .... dis 40 %
Empire .... dis 50 %
Buffalo Ball .... dis 40 %

Brackets.
Shelf, plain .... dis 50&10 %
Shelf, fancy .... dis 60&10 %
Reading, Plain .... dis 25&10 %
Reading, Rosette .... dis 60&10 %

Bright Wire Goods. List of June 25, '83 .. dis 70&10 %

Butt Rings.
Union Nut Co .... dis 55 %
Sargent's .... dis 66⅔&10 %
Hotchkiss' low list .... dis 15 %
Humason, Beckley & Co's .... dis 66⅔&10 %
Peck, Stow & W. Co's .... dis 33⅓ & 10 %

Butts.
Wrought Brass .... dis 65&10&5 %
Cast Brass, Tiebout's .... dis 33⅓ %
Cast Brass, Corbin's Fast Joint .... dis 20&10 %
Cast Brass, Loose Joint .... dis 10&10 %
Fast Joint, Narrow .... dis 45&10 %
Fast Joint, Broad .... dis 45&10 %
Loose Joint .... dis 55&10 %
Loose Joint, Japanned .... dis 55&10 %
Loose Joint, Japanned with Acorns .... dis 55&10 %
Parliament Butts .... dis 55&10 %
Mayer's Hinges .... dis 60&10 %
Loose Pin, no Acorn .... dis 50&10 %
Loose Pin, Acorns .... dis 50&10 %
Loose Pin, Acorns, Japanned .... dis 60&10 %
Loose Pin, Acorns, Japanned, Plated Tips .. dis 60&10 %

WROUGHT IRON.
Fast Joint, Narrow .... dis 40&10 %
Fast Joint, Lt. Narrow .... dis 50&10 %
Fast Joint, Broad .... dis 50&10 %
Loose Joint, Broad .... dis 55&10 %
Table Butts, Back Flaps, &c .... dis 50&10 %
Inside Blind Regular .... dis 50&10 %
Inside Blind, Light .... dis 50&10 %
Loose Pin, Wrt .... dis 55&10 %
Loose Pin, Light .... dis 50&10 %
Spring Hinges:
Geer's Spring and Blank Butts .... dis 33⅓ %
Sabin Mfg. Co.'s Double Acting .... dis 35 %
Union Spiral Spring, Japanned .... dis 25 %
Union Spring Hinge Co.'s .... dis 25 %
American Spring Hinge Co.'s .... dis 30 %
Gem Spring Hinges .... dis 30 %
Barker's Double Acting .... dis 20 %
Union Mfg. Co .... dis 25 %
Bommer's .... dis 25 %
Buckman's .... dis 25 %
Empire .... dis 50&10 %
Acme .... dis 65&10 %
Climax .... dis 50&10 %
Blind Butts, Parker .... dis 70&2 %
Blind Butts, Palmer .... dis 45&10 %
Blind Butts, Seymour .... dis 70 %
Blind Butts, Lull & Porter .... dis 70&10 %
Blind Butts, Nicholson .... dis 45&10 %
Blind Butts, Huffer .... dis 50 %
Blind Butts, Clark's, Nos. 1, 3, 5 .... dis 70&2 %
Blind Butts, Sargent's, Nos. 1, 3 .... dis 50&10&10 %
Blind Butts, Sargent's, No. 12 .... dis 70&10 %
Blind Butts, Reading's Gravity .... dis 66⅔&10 %
Blind Butts, Shepard's "Noiseless," Nos. 50, 60, 65, 45 and 55 .... dis 70 %
Blind Butts, Shepard's "Noiseless," Nos. 050 and 060 .... dis 70&10 %
Shepard's Lull & Porter Shutter Hinges .... dis 70&10 %
Shepard's Reversible Shutter Hinges .... dis 70&10 %
Clark's Improved Shutter Hinge, Nos. 0, 1, 1½, 2, 2½, 3 .... dis 60&10 %

Bow Pins.
Humason, Beckley & Co.'s, Nos. 1 and 2 .... dis 60 %
Humason, Beckley & Co.'s other Nos .... dis 66⅔&10 %
Sargent & Co.'s .... $19.70 and $21.40. dis 66⅔&10 %
Hotchkiss .... dis 25 %
Peck, Stow & W. Co .... dis 30&10 %

Butcher's Cleavers.
Humason & Beckley Mfg. Co .... dis 25 %
Bradley's .... dis 25 %
Beatty's .... dis 25&5 %
1 2 3 4 5 6 7 8
$16.50 19.00 21.50 24.00 27.00 30.00 33.50 36.50

Can Openers.
Messenger's Comet .... ℘ doz $3.00, dis 25
American .... ℘ gross $6.00, dis 25 %
Duplex .... ℘ doz 25c. dis 15@20 %
Lyman's .... ℘ doz $3.75, dis 20 %
No. 4, French .... ℘ doz $2.25, dis 55 %
No. 5, Iron Handle .... ℘ gross $9.00, dis 25 %
Eureka .... ℘ doz $2.50, dis 10 %
Sardine Scissors .... ℘ doz $7.00, dis 55 %
Star .... ℘ doz $5.00, dis 25&5 %
Sprague, No. 1, $2.00; No. 2, $2.25; No. 3, $2.50 .... dis 50&10 %
"Worlds Best" ℘ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $30.00 .... dis 50 & 10 %
Universal .... ℘ doz $2.00, dis 35 %
Domestic .... ℘ doz $2.50, dis 45 %
Champion .... ℘ doz $2.00, dis 50 %

Caps—Percussion, ℘ 1000.
Hicks & Goldmark's
F. L. Waterproof, 1-10's 50c
E. B. Trimmed Edge, 1-10's 65c
E. B. Ground Tr'md Edge, Central Fire, 1-10's .. 70c
Pistol Waterproof, extra heavy, 1-10's $1.10
Musket Caps, 1-10's .... 80c } dis 10&10
U. M. C., F. C. trimmed 50c
U. M. C., F. L. ground .... 70c } dis 10&10 %
U. M. C., Cen. fire ground 70c
U. M. C., Double W. Proof .... $1.40 } dis 10&5 %
G. D. & S. B .... 33c, dis 10 %
Double Waterproof, in 1-10's $1.40
Colt's Pistol, in 1-10's .... 72c } dis 10 %
F. L 50c
E. B. 1-10, trimmed 65c
E. B. 1-10, ground edge .... 70c } dis 10&5 %
Musket, in 1-10's .... 80c, dis 25 %

Cartridges.—Rim .... dis 75&5 %
Central Fire .... dis 45 %

Cards.—Horse and Curry, new list, July, '81, dis 10 %
Cotton .... new list, July, '81, dis 10 %
Wool .... new list, July, '81, dis 10 %

Carpet Stretchers.
Cast Steel, Polished .... ℘ doz $5.00, dis 30 %
Cast Iron, Steel Points .... ℘ doz $2.00, dis 50&5 %
Socket .... ℘ doz $2.50, dis 25 %
Bullard's .... dis 25 %

Casters.—Bed .... dis 45@50 %
Plate .... 45@50 %
Shallow Socket .... dis 35&10 %
Deep Socket .... dis 25&10 %
Martin's Patent (Phoenix) .... dis 25 %

Cattle Leaders.
Humason, Beckley & Co.'s .... dis 70&10 %
Sargent's .... dis 70&10 %
Hotchkiss .... dis 25 %
Peck, Stow & W. Co .... dis 33⅓&10 %

Chain.
Trace, 6½-10-2 .... ℘ pair 79c
Trace, 6½-10-3 .... ℘ pair 70c } dis 35 %
Trace, 7-10-2 .... ℘ pair 86c
German Halter Chain, list of Dec. 31, 1881 .... dis 50 %
German Coil, list of Dec. 31, 1881 .... dis 50 %
Covert Halter, Hitching and Breast .... dis 35&5 %
Oneida Halter Chain (old list) .... dis 45 %
Galvanized Pump Chain .... ℘ ℔ 9½c net
Jack Chain, Iron .... dis 60&10 %
Jack Chain, Brass .... dis 50&10 %

Chalk.
White .... ℘ gross 60c net
Red .... ℘ gross 80c net
Blue .... ℘ gross $1.00 net
White Crayons .... ℘ gross 11c net

Chalk Lines.—See Lines

Chisels.
Socket Framing, Crossman .... dis 65&5 %
Socket Framing, Arlington Edge Tool Co .... dis 65&10 %
Socket Framing, Buck Bros .... 1876 list, dis 22½ %
Socket Framing, Merrill .... dis 65&10 %
Socket Framing, Witherby Tool Co .... dis 65&10 %
Socket Framing, Douglass' .... dis 65&10 %
Socket Firmers, Crossman .... dis 65&5 %
Socket Firmers, Arlington Edge Tool Co .... dis 65&10 %
Socket Firmers, Buck Bros .... 1876 list, dis 22½ %
Socket Firmers, Merrill .... dis 65&10 %
Socket Firmers, Witherby Tool Co .... dis 65&10 %
Socket Firmers, Douglass' .... dis 65&10 %
Socket Corner .... dis 65&10 %
Tanged Firmers .... dis 40@45 %
Tanged Firmers, Butcher's .... $5.00@$5.25 to £
Tanged Firmers, Spear & Jackson's .... 5.00 to £
Tanged Firmers, Buck Bros (Shank) .... 5.25 to £
Globe Mfg. Co .... dis 65&10 %

Clamps.
Iron, Providence Tool Co.'s Wrt. Iron .... dis 25 %
Iron, Adjustable, Gray's .... dis 20 %
Iron, Adjustable, Lambert's .... dis 20 %
Iron, Adjustable, Snow's .... dis 40&5 %
Iron, Adjustable, Hammer's .... dis 15 %
Iron, Adjustable, Stearns' .... dis 20&10 %
Iron, Cabinet, Sargent's .... dis 70&10 %
Iron, Carriage makers', Sargent's .... dis 65&10 %

Clips, Axle.
Norway or Best .... dis 60&5 %
Superior .... dis 60&5 %

Cockeyes .... dis 55 %

Cocks, Brass.
Racking, new list, July 10, 1880
Globe, new list, July 10, 1880
Plain Bibbs, new list, July 10, 1880
Ale and Beer, new list, July 10, 1880 } dis .... 45 %

Coffee Mills.
Board and Box .... dis 45 %
Wilson's .... dis 45 %
Selsor's Pat .... $9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.) .... dis 20&10 %
The "Swift" (Lane Bros.) .... dis 20&10 %
Webb's Patent .... dis 45 %

Combined Dinner Pail and Lantern.
Per doz $15.00 .... dis 30 %

Compasses, Dividers, &c.
Compasses .... dis 55 %
Calipers .... dis 55 %
Dividers .... dis 55 %
Bemis & Call Co.'s Dividers .... dis 60&5 %
Bemis & Call Co.'s Compasses and Callipers .. dis 50&5 %
Bemis & Call Co.'s Wing & inside or outside .. dis 50&5 %
Bemis & Call Co.'s Double .... dis 60 %
Bemis & Call Co.'s (Call's Patent Inside) .... dis 30 %
Excelsior .... dis 50 %
Cook's Extension .... dis 25 %

Coopers' Tools.
Bradley's .... dis 10 @ 20 %
Barton's .... dis 20 %

Corkscrews.—Humason & Beckly Mfg. Co. dis 33⅓ %
Clough's Pat .... dis 33⅓ %

Corn Knives and Cutters.—Bradley's .... dis 10 %
Wadsworths .... dis 25 %

Crow Bars.
Cast Steel .... ℘ ℔ 6½c
Iron, Steel Points .... ℘ ℔ 5 c

Curling Irons, &c.
⅜, ⅝, ¾ in., $1.80, 2.00, 2.40 .... dis 10 %
Curling Tongs .... ℘ doz $3.65, dis 10 %
Pinching Irons .... ℘ doz $7.50, dis 20 %

Curry Combs.
Fitch's .... dis 50&10 %
Hotchkiss, Novelty, new list, July 1880 .... dis 25 %
Hotchkiss, Exclr. Supr. Champion .... dis 25 %
Rubber .... ℘ doz $10.00, dis 25 %

Curtain Pins.
Silvered Glass .... net
White Enamel .... net

Cutlery.
Meriden Cutlery Co. (Table) .... net
Am. Miller Bro.'s Cutlery Co .... dis 25 %
Humason & Beckley, Pocket .... dis 33⅓ %
Naugatuck Cutlery Co .... list net
Aaron Burkinshaw's Pocket .... dis 25 %

Dog Collars.
Embossed Gilt .... dis 30&10 %
Leather .... dis 40 %
Brass .... dis 40 %

Door Springs.
Torrey's Rod, regular size, ℘ doz., $3 .... dis 50 %
Gray's Rod .... dis 15 %
Bee Rod .... dis 15 %
Warner's .... dis 30 %
Gem (Coil):
No. 1, Large Japanned .... ℘ doz $4.00
No. 2, Medium, Japanned .... ℘ doz 2.75
No. 3, Small, Japanned .... ℘ doz 2.00 } dis 50 & 10 %
Star (Coil)—For Cop'd, Nickel-Plated &c., see list.
No. 4 ("Shoo Fly") Screen door size, ℘ doz $1.50
No. 5, Screen Door size .... ℘ doz 2.00
No. 6, Medium .... ℘ doz 2.75
No. 7, Large .... ℘ doz 4.00 } dis 60 %
Sabin's Lever .. No. 1, $1; 2, $1.50; 3, $2; 4, $2.50 . dis 35 %
Sabin's Boss. No. 1, ℘ doz. $4.00; 2, $2.75; 3, $2. dis 33⅓ %
Sabin's Crown .... ℘ doz $1.50. dis 33⅓ %
Philadelphia .... 5 in., $5.00; 8 in., $7.75, dis 35 %
Cowell's .... No. 1, ℘ doz. $18.00; No. 2, $15.00, dis 50 %
Rubber, complete .... ℘ doz. $1.80, dis 10 %
Hercules .... dis 50 %

Drawing Knives.
Arlington Edge Tool Co .... dis 65&10 %
Crossman's No. 1 .... dis 65&5 %
Morrill .... dis 65&10 %
Nobles Mfg. Co .... dis 15 %
Bradley's .... dis 35 %
Adjustable Handle .... dis 20 %
Witherby Tool Co .... dis 65&10 %
Douglass .... dis 65&10 %
Globe Mfg. Co .... dis 65&10 %

Drills and Drill Stocks.
Blacksmiths' .... each, $2.50, dis 10 %
Blacksmiths' Self-Feeding .... each, $7.50, dis 20 %
Breast, P. S. & W .... dis 20&10 %
Breast, Hotchkiss' .... dis 20 %
Breast, Wilson's .... dis 20 %
Breast, Millers Falls .... each, $3.00, dis 25 %
Breast, Bartholomew's .... each, $2.50, dis 25&10 %
Ratchet, Merrill's .... dis 10 %
Ratchet, Ingersoll's .... dis 25 %
Ratchet, Whitney's .... dis 20 %
Ratchet, Weston's .... dis 20 %
Ratchet, Moore's Triple Action .... dis 20&25 %
Whitney's Hand Drill, Plain, $11.00 Adjustable, $12.00 .... dis %
Wilson's Drill Stocks .... dis 10 %
Automatic Boring Tools .... each, $2.25, dis 20 %

Drill Chucks.
Morse's Beach Patent .... dis 30 %
Morse's Adjustable .... each, $10.00, dis 30 %
Danbury .... each, $8.00, dis 30 %

Egg Beaters.
Dover .... ℘ doz. $2.50, dis 2 %
Monroe's .... dis 50 %
National .... ℘ doz. $4.50, dis 33⅓ %
Standard .... ℘ gross, $18.00, dis 25 %
Family (T. & S. Mfg. Co.) .... ℘ gross, $18.00, net
Acme .... ℘ gross, $12.00, dis 25 %
Triumph (T. & S. Mfg. Co.) .... ℘ gross, $11.50, net

Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in. (Duc's Improved), ℘ 100, $15.00 @ $54.00 .... dis 10 %
Mill E. Buckets, heavy, 5 to 10 in. (Duc's Improved), ℘ doz. $5.60 @ $10.20 .... dis 10 %
Storehouse (Duc's Patent), 12 to 17, $12 @ $20 .... dis 10 %

Emery and Emery Paper.
Regular numbers .... ℘ ℔ 6c
Flour and F. F .... ℘ ℔ 4c
B. & A. Emery Paper .... dis 30&5 %
Sibley's Emery and Crocus Cloth, large size, $10; medium, $10.50 ℘ ream .... dis 15 %

Enameled and Tinned Ware.
Kettles .... dis 50 %
Sauce Pans .... dis 25 %
Tinned Sauce Pans .... dis 25 %

Escutcheon Pins.
Brass .... dis 50 %

Escutcheons.
Door Lock .... Same discounts as Door Locks
Brass Thread .... dis 55 %
Wood .... dis 25 %

Faucets.
Fenn's .... dis 40 %
Bohren's Patent Rubber Ball .... dis 25 %
Fenn's Cork Stops .... dis 33⅓ %
Star .... dis 55&10 %
Frary's Patent Petroleum .... dis 20&10 %
West's Patent Key .... dis 45 %
Anchor Lock .... dis 45 %
Metallic Key, Leather Lined .... dis 60 %
Cork Lined .... dis 70 %
J. Sommer's Best Metallic Key .... dis 40&10 %
J. Sommer's Cork Lined, 1st quality .... dis 50 %
Self-Measuring, Enterprise .... ℘ doz. $36.00, dis 20&10 %
Self-Measuring, Lane's .... ℘ doz. 36.00, dis 20&10 %
Self-Measuring, Victor .... ℘ doz. $36.00, dis 20&10 %

Felloe Plates .... ℘ ℔, 10c, dis 25 %

Files.
J. & Riley Carr .... new list April 1, '83, dis 15 %
J. & Riley Carr Horse Rasps .... dis 10 %
Butcher's ....
Moss & Gamble .... new list, dis 15 %
H. Disston & Sons .... dis 45 %
Nicholson .... dis 45 %
New American .... dis 45 %
Union File Co .... dis 45 %
Heller Bros.' Files .... dis 45 %
Heller Bros.' Horse Rasps .... dis 35 %
Stubs .... new list, dis 25@30 %

Fluting Machines.
Knox, 4½-inch Rolls .... $3.50 each
Knox, 6-inch Rolls .... $4.00 each } dis 25 %
Eagle, 3½ inch Roll .... $2.15, dis 25 %
Eagle, 5½-inch Roll .... 2.85, dis 25 %
Crown, 4½-in., $3.50; 6-in., $4.00; 8-in., $6.50 each, dis 25 %
Crown Jewel .... 6-in., $3.40 each, dis 25 %
American, 5-in., $3; 6-in., $3.40; 7-in., $4.50 each, dis 25 %
Domestic Fluter .... $1.50 each, net
Geneva Hand Fluter, White Metal .... ℘ doz $12, dis 25 %
Crown Hand Fluter, Nos. 1, $15; 2, $12.50; 3, $10.00 ℘ doz .... dis 30 %
Shepard Hand Fluter, No. 85 .... per doz $15, dis 40 %
Shepard Hand Fluter, No. 110 .... per doz $8.75, dis 30 %
Shepard Hand Fluter, No. 95 .... per doz $6.50, dis 20 %
Clark's Hand Fluter .... ℘ doz $15.00, dis 33⅓ %
Combined Fluter and Sad Iron .... ℘ doz $15.00, dis 30 %
Buffalo .... ℘ doz $10.00, dis 10 %

Fluting Scissors .... dis 45 %

Fly Traps.
Paragon .... ℘ doz, $3, net

Forks.
Hay, Manure and Spading .... dis 50&10 %
Plated, A 1, Rogers & Bro .... dis 40&10&5 %
Plated, Reed & Barton .... dis 40&10&5 %

Fruit and Jelly Presses.
Enterprise Mfg. Co .... dis 25 %

Fry Pans.
Burnished list as follows .... dis 60&10&5 %
No 0 1 2 3 4 5 6 7 8
℘ doz $3.00 3.75 4.25 4.75 5.25 6.00 7.00 8.00 9.00
"Acme" .... dis 40&10 %

Gauges.
Marking Stanley's .... dis 50&10 %
Marking, Chapin's .... dis 55&10 %
Wire .... dis 70&10 %
Wire, Disston's .... dis 20 %
Wire, Wheeler, Madden & Co .... dis 10 %

Gimlets.
Nail and Spike .... dis 40&10 %
"Eureka" Gimlets .... dis 40&10 %
"Diamond" Gimlets .... dis 40&10 %
Double Cut, Shepardson's .... dis 40&10 %
Double Cut, Hartwell's .... dis 40&10 %
Double Cut, Ives' .... dis 40&10 %
Double Cut, Douglass' .... dis 40 %
"Bee" .... ℘ gro. $12.00, dis 25 %

Glue Pots.
Tinned and Enameled .... dis 25&5 %
Family, Howe's "Eureka" .... dis 25 %
Family, L. F. & C.'s "Handy" .... dis 30 %

Grindstone Fixtures.
Sargents Patent .... dis 70&10 %
Reading Hardware Co .... dis 30&10 %

Gun Wads.
U. M. C. B. E., 11 up $2.00
U. M. C. B. E., 9&10 .... 2.30
U. M. C. B. E., 7&8 .... 2.60
U. M. C. P. E., 11 up 3.10
U. M. C. P. E., 9&10 .... 4.00
U. M. C. P. E., 7&8 .... 4.90 } dis 5&5 %

Halters.
Covert's Pat. Rope .... dis 50 %
Horse and Cattle Ties Covert's .... dis 50 %

Hammers.
Maydole's .... dis 15 %
Cheney's, new list, March, 1883 .... dis 20&5 %
Hartford Hammer Co. (new list July 1, '81) .... dis 20 %
Humason & Beckley .... dis 15 %
Verree .... dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.26, 1.50 and 1.75. dis 25&10 %
Nelson Tool Works .... dis 40&10 %
Warner & Noble's .... dis 5 %
Yerkes & Plumb .... dis 15 %
Wilkinson's Smiths' .... 11½c ℘ ℔ net

Hand Cuffs and Leg Irons.
Providence Tool Co., Hand Cuffs, $15.00 ℘ doz. dis 10 %
Providence Tool Co., Leg Irons, $25.00 ℘ doz .... dis 10 %
Tower's .... dis 25 %

Handles.—Door or Thumb Latches.
Nos 0 1 2 3 4
Per doz .... $0.80 1.00 1.18 1.35 1.60 .... dis 60&10 %
Roggin's Latches .... ℘ doz 35c. @ 40c. net
Bronze Iron Drop Latches .... ℘ doz $0.90 @ 1.10
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88 .... dis 10 %
Barn Door .... ℘ doz $1.60, dis 10&10 %
Wrought Chest .... dis 70 %
Surface Chest .... dis 60&10 %
Flush Chest .... dis 60&10 %
Lifting .... dis 55&10 %
Saw and Plane .... dis 40&10 %
Boynton's Loop Saw Handles .... 50c. dis 35 %
Boynton's Centennial Saw Handles .... 30c. dis 25 %
Hammer and Hatchet .... dis 20 %
Bard Awl .... ℘ gross, $1.00 dis 10 & 20 %

Hickory Firmer Chisel, assorted, ℘ gross .. $4.50
Hickory Firmer Chisel, large, ℘ gross 5.00
Apple Firmer Chisel, assorted, ℘ gross 5.00
Apple Firmer Chisel, large, ℘ gross 6.00
Socket Firmer Chisel, assorted, ℘ gross 3.00
Socket Framing Chisel, assorted, ℘ gross .. 5.00
File assorted, ℘ gross 2.75
Auger, assorted, ℘ gross 5.00
Auger, large, ℘ gross .... 7.00 } dis 20&10 @ 25&10
Patent Auger, Ives' .... dis 25 %
Patent Auger, Douglass' .... ℘ set $1.25 net
Patent Auger, Swan's .... ℘ set $1.00 net

Hangers.
Barn Door, old patterns .... dis 60&10 %
Barn Door, New England .... dis 65&10 %
Climax (Anti-Friction) .... dis 50 %
Challenge .... dis 50 %
"Champion" Medina Mfg. Co .... $15; dis 50&10 %
Sterling Improved (Anti Friction) .... dis 65&10 %
Cheritree .... dis 50 %
Kidder's .... dis 50&5 %
U. S .... 4 in., $12; 5 in., $15; dis 60 %
The "Boss" .... dis 50&10 %
Terry's Patent .... 5 in., $12; 3½ in., $10; dis 40 %

Harness Snaps.
Anchor (T. & S. Mfg. Co.) .... dis 60 %
Henshaw's, list of 1⅛ changed to $14.00 .... dis 60 %
Judd's, list of 1⅛ changed to $14.00 .... dis 55&10 %
Fitch's (Bristol), list of 1⅛ change to $14.00 .. dis 55&10 %
Hotchkiss' .... dis 10 %
Andrews' .... dis 50 %
Sargent's .... dis 70&10 %
German, low list, Sep., 1882 .... dis 33⅓ %
German, Sargent's new list .... dis 60&10 %
Covert .... dis 50 %
Covered Spring, new list, Oct., 1882 .... dis 60&10 %

Hatchets.
Isaiah Blood .... dis 30 %
Shingling, Nos. 1 2 3 .... ℘ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 .... ℘ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 .... ℘ doz 7.50 8.00 8.50
Hunt's .... dis 25 %
Shingling, Nos. 1 2 3 .... ℘ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 .... ℘ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 .... ℘ doz 7.30 8.25 9.00
Hurd's .... dis 30 %
Shingling, Nos. 1 2 3 .... ℘ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3 .... ℘ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 .... ℘ doz 8.00 8.50 9.00
Yerkes & Plumb .... dis 30 %
Shingling, Nos. 1 2 3 .... ℘ doz $7.50 $8.00 $8.50
Claw, Nos. 1 2 3 .... ℘ doz 8.25 8.75 9.25
Lathing, Nos. 1 2 3 .... ℘ doz 7.50 8.00 8.50
Simmons' .... dis 30 %
Shingling, Nos. 0 1 2 3 .. ℘ doz $7.50 $8.00 $8.50 $9.00
Claw, Nos. 0 1 2 3 .. ℘ doz 8.50 9.00 9.50
Lathing, Nos. 0 1 2 3 .. ℘ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4 .. ℘ doz 9.00 10.00 12.00 14.00
Broad, Nos. 5 6 7 8 .. ℘ doz 16.00 18.00 20.00 22.00
Collins .... dis 10
Shingling, Nos. 1 2 3 .... ℘ doz $5.50 $6.00 $6.50
Claw, Nos. 1 2 3 .... ℘ doz 6.00 6.50 7.00
Lathing, Nos. 1 2 3 .... ℘ doz 5.50 6.00 6.50
Peck's Champion Blade .... dis 30
Shingling, Nos. 1 2 3 .... ℘ doz $8.00 $8.50 $9.00
Lath, Nos. 1 2 3 .... ℘ doz 8.00 8.50 9.00
Claw, Nos. 1 2 3 .... ℘ doz 9.00 9.50 10.00
Half, Nos. 1 2 3 .... ℘ doz 8.00 8.50 9.00
Ax Pattern, Nos. 1 2 3 .... ℘ doz 10.00 11.00 12.00

Hay Knives.
"Lightning" .... ℘ doz $20.00 dis 10 %
Wadsworth's .... dis 33⅓ %

Hinges.
Gate, Western .... ℘ doz $4.00 dis 55 %
Gate, N. E .... ℘ doz $7.70, dis 55 %
Gate, N. E. Reversible .... ℘ doz $6.45, dis 55 %
Gate, Clark's, Nos. 1 2 3 .... dis 50 %
Gate, N. Y. State .... ℘ doz $5.05, dis 45&10 %
Gate, Automatic .... ℘ doz $12.50, dis 50 %
Gate, Common Sense .... ℘ doz pair $4.50, dis 50 %
Gate, Seymour's .... dis 45&10 %
Gate, Shepard's .... Nos. 1, 2, 3, 10, 20 & 25, dis 50&10 %
Rolled Blind Hinges .... dis 60&10 %
Rolled Plate .... dis 60&10 %
Rolled Raised .... dis 60&10 %
Plate Hinges "Providence" { 8, 10 & 12 in., $5.55 ℘ 100 ℔; over 12 in., $4.50 ℘ 100 ℔ } .. dis 10 %
Screw Hook and Strap { 8, 10, 12 in., $7.00 ℘ 100 ℔; 14 to 36 in. $5.75 ℘ 100 ℔ } .. dis 10 %
Heavy Welded Hook { 8 to 12 in., $7.00 ℘ 100 ℔; 14 in & up, $5.50 ℘ 100 ℔ } dis 10 %
Screw Hook and Eye .... { ⅝ & 1 in., 9c; ⅝ in., 9c; ½ in., 10c; ⅜ in., 12c } dis 20 %
Wrought Strap and T .... dis 55&10 %

Hoes.
Riveted Shank .... ℘ doz $5.00, dis 55 %
Socket .... ℘ doz $5.25, dis 55 %
Grub .... ℘ doz $11 dis 35 %
Planters' .... dis 50 %
Scovill Pattern .... dis 50 %
Handled Planters' .... dis 50&10 %
Hick's Pat. Solid C. S. Planters' .... dis 20&10&30 %
Hick's Pat. Solid C. S., Scovill Pattern .... dis 20&5&35 %
Winsted & Lane, Planters' .... dis 25 %
Winsted & Lane, Scovill Pattern .... dis 20&25 %
Magic .... ℘ doz $5 net

Hooks.
Bird Cage, Sargent's list .... dis 60&10 %
Bird Cage, Reading .... dis 40&10 %
Cotton .... ℘ doz $4.00, dis 50 %
Cotton Patented (N. Y. Mallet & Handle W'ks) dis 30 %
Cotton (Humason & Beckley Mfg. Co) .... dis 50 %
Belt .... dis 60&10
Bench—Hotchkiss' $5.00 ℘ doz .... dis 10 %
Weston's, No. 1, $10.00; No. 2, $9.00 ℘ doz .... dis 25 %
McGill's, $3.00 ℘ doz .... dis 10 %
Clothes Line, Sargent's list .... dis 65&10 %
Clothes line, Reading list .... dis 45&5&10 %
Ceiling, Sargent's list .... dis 60&10&10 %
Harness, Reading list .... dis 40&10 %
Coat and Hat, Sargent's list .... dis 60&10&10 %
Coat and Hat, Reading .... dis 40&10&10 %
Wire Coat and Hat, Gem .... dis 30&10 %
Wire Coat and Hat, Miles' .... dis 70 %
Picture Hooks, Brown's Pat. Solid Brass, $4.00 ℘ gross .... dis 25 %
Tassel and Picture (T. & S. Mfg. Co.) .... dis 50 %
Wrought Staples and Hooks & Staples .. dis 70&7½ %
Wrought Staples, Stanley's list .... dis 70&7½&10 %
Wire Screw Hooks and Eyes .... new list, dis 70&10 %
Grass and Bush .... dis 45@50 %
Whiffletree—Patent .... dis 40 %
Hooks and Eyes—Malleable Iron .... dis 60&10 %
Hooks and Eyes—Brass .... dis 60&10 %

Horse Nails.
Nos. 5 6 7 8 9 10
Ausable, ℘ ℔ .... 31c 28c 27c 25c 24c 23c .. dis 30&10 %
Clinton, Plain, ℘ ℔ 23c 21c 20c 19c 18c .... dis 30&10 %
Clinton, Fin., ℘ ℔ 24c 22c 21c 20c 19c .... dis 30&10 %
Essex, ℘ ℔ .... 31c 28c 26c 25c 24c 23c .... dis 30&10 %
Putnam " .... 27c 24c 22c 21c 20c 19c .... dis 5&7 %
Vulcan, " .... 26c 23c 21c 20c 19c 18c .... dis 12½ %
Globe, " .... 24c 21c 19c 18c 17c 16c .... dis 12½ %
A. C., " .... 26c 23c 21c 20c 19c 18c .... dis 10&10 %
Ch'mpl'in Forged " .... 31c 28c 26c 24c 23c 23c .... dis 30 %
New Haven, " 31c 28c 26c 25c 24c 23c .... dis 30&10 %
Bridgewater, " 24c 21c 19c 18c 17c 16c .... dis 25 %

Horse Shoes.
Burden .... ℘ keg $4.37½
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy .... ℘ keg $4.37½
Walker's Forged, Light, Med. or Heavy . ℘ keg $4.37½
Mule Shoes .... ℘ keg $5.37½
Dunning's Steel .... ℘ keg $9.25

Ice Awls, Chisels, &c.
American Ice Chisel .... ℘ doz $3.00 net
National Ice Chisel .... ℘ doz $6.25 dis 20 %
Novelty Ice Breakers .... ℘ doz $3.25 dis 20 %
White's Sliding Head Picks .... ℘ doz $2.50 dis 40 %
Dunlap's Ring Picks .... ℘ doz $2.00 dis 20 %
Wood Head Picks, Sargent's .... ℘ doz $1.60 dis 50&10 %
Iron Head Picks, Sargent's .... ℘ doz $1.25 dis 50&10 %
Ice Mallets, Pick in head .... ℘ doz $1.75 dis 15 %
Ice Mallets, Pick in Handle .... ℘ doz $2.00 dis 15 %
Ice Axes, Small Cast or Malleable .. ℘ doz $1.30 dis 10 %
Combination Ice Tools .... ℘ doz $2.00 net

Ice Cream Freezers.
Amn. Mch. Co .... dis 40 %
Torrey's .... dis 40 %
Packer's .... dis 40 %

Ice Creepers.
Safety Reversible .... ℘ gross $25
Arctic Solid .... ℘ gross $30 } dis 10 %

Ice Tongs.
Champion .... ℘ doz $6.00 dis 20&10 %
Family .... ℘ doz $2.75 dis 15 %

Kettles.
Brass, 7 to 13 inches inclusive .... ℘ ℔ 28c net
Brass larger than 13 inches .... ℘ ℔ 32c net

Knives.
Ames' Butcher Knives .... dis 20 %
Ames' Shoe Knives .... dis 15 %
Ames' Bread Knives .... ℘ doz $1.50 dis 15 %
Moran's Shoe and Bread Knives .... dis 20 %
Hay and Straw, Wadsworth's .... dis 33⅓
Table and Pocket .... See Cutlery

Knobs.
Carriage (Jap'd 80c ℘ gross) .... dis 60&10 %
Base—Common .... dis 30&10 %
Hemacite Door Knobs .... new list, dis 35&5 %
Door Mineral
Door Por. Jap'd
Door Por. Plated
Door Por. } Same discounts as Door Locks.
Furniture Plain .... 75c gross inch, dis 10 %
Furniture, Wood Screws .... dis 20 %
Picture, Judd's .... dis 60&10&10 %
Picture, Sargent's .... dis 60&10 %
Hemacite, Picture .... dis 35 %
Shutter, Porcelain .... dis 60&10 %

Ladles.
Melting, Sargent's .... dis 50&10 %
Melting, Reading .... dis 30&10 %
Melting, Monroe's Patent .... ℘ doz $4.00 dis 30 %
Melting, P. S. & W .... dis 30&10 %

Lanterns.
Tubular .... No. 0, $8.65; No. 1, $10.15; With Guards 35c extra } net
Nail City .... No. 1 ℘ doz $10; No. 2, $9, net
Meteor .... No. 1, ℘ doz, $9.50; No. 2, $8.50, net
Hurricane, No. 2 .... ℘ doz $5.75, net
Peerless, No. 5 .... ℘ doz $11.75, dis 10&10 %
Brady's Patent .... dis 10&10 %
Ætna .... dis 10&10 %
Yankee .... dis 10&10 %
De Beque .... dis 10&10 %
Police Small, $6.25; Med., $7.50; Large, $10.00, net
Convex Reflector .... $2.75 ℘ doz, dis 15 %

Lawn Mowers.
Excelsior and Clipper .... dis 33⅓ %
Pennsylvania .... dis 30 %
Philadelphia .... dis 30 %

Lemon Squeezers.
Porcelain Lined .... ℘ doz $6.00, dis 30 %
Wood .... ℘ doz 3.00, dis 30 %
Eureka, Tinned .... ℘ doz 8.00, dis 10 %
Dunlap's Improved .... ℘ doz 3.75, dis 20 %
Sammis' .... No. 1, $5; 2, $8.40; 12, $15 ℘ doz; dis 25&10 %
Townsend's Patent .... $6.00 ℘ doz, dis 33⅓ %
Jennings "Star" .... $2.00 ℘ doz net
The "Boss" .... ℘ doz $4.00, dis 10&10 %
Dean's Nos. 1, ℘ doz, $15.00; 2, $9.00; 3, $5.00 dis 40&10 %

Lines.—Linen Fish .... dis 25&10 %
Cotton Chalk .... dis 55 %
Silver Lake, Braided, Nos. 0, $6.00; No. 1, $6.70; No. 2, $7.00; No. 3, $7.50 ℘ gross .... dis 20 %
Masons' Linen, No. 3½, $1.50; No. 4, $2; No. 4½, $2.50 .... net
Masons' Colored Cotton .... dis 45 %
Wire Clothes, Galvanized .... each 25c@40c net

Locks and Latches.
Cabinet, Eagle
Cabinet, Gaylord
Cabinet, Bridgeport } Changes made in list price of some numbers Jan. 1, 1881, dis 25&2 %
Cabinet, P. & F. Corbin .... dis 25&2 %
Cabinet, A. E. Deitz .... dis 30 @ 40 %
Cabinet, Stoddard Lock Co .... dis 40&5 %
Trunk, new list, Jan. 1, 1881 .... dis 15&2 %
Langstroth & Crane's List, Jan. 1, '77:
Round Key, Nos. 1 to 5 .... dis 40&10 %
Round Key, Nos. 5½ to 12 .... dis 40&10 %
Flat Key .... dis 33⅓&10 %
A. E. Deitz, Flat Key .... dis 30@40 %
Yale Lock Co., Flat Key .... dis 40 %
"Shepardson" or "U. S." .... dis 35 %
"Felter" or "American" .... dis 33⅓ %
Plate .... dis 33⅓&2 %
F. Many's "Extension Cylinder" .... $10.50 ℘ doz net

DOOR LOCKS, ETC.
Branford
Norwalk
Norwich
P. & F. Corbin
Russell & Erwin
Mallory, Wheeler & Co.
Whipple Mfg. Co. } Revised list of June 11, 1882, dis 50&10 % and 2 % for cash.
Reading Hardware Co. (low list) .... dis 40&2 %
Padlocks—Russell & Erwin
Mallory, Wheeler & Co.
Norwich Lock Mfg. Co.
Wm. Wilcox & Co. } dis 30&10 % and 2 % for cash
Yale Lock Mfg. Co.'s "Standard" .... dis 40 %
Romer's .... dis 25 @ 40 %
Conestoga .... dis 60 %
Scandinavian (Moore Bros.) .... dis 80 %
J. H. McWilliams .... dis 10 %
A. E. Dietz .... dis 35 %
"Star" .... dis 45 %

Lustro.—4-oz. bottles, ℘ doz $1.75; ℘ gros $17.00 net

Mallets.—Hickory .... dis 10&10 %
Lignumvitæ .... dis 10&10 %
Penfield Block Co., Lignumvitæ & Hickory .... dis 30 %

Meat Cutters.
Dixon's (P.S.&W.) Nos. 1 2 3 4
℘ doz .. $14.00 17.00 19.00 30.00—dis 25&5 %
Miles' Challenge .... Nos. 1 2 3
℘ doz .. $22.00 30.00 40.00—dis 40 %
Perry's Nos. 1 2 3 4 4 g'rd 5 g'rd
Each .. $3.00 4.00 5.00 11.00 13.00 36.00—dis 25&5 %
Woodruff's (P. S. & W.) .... Nos. 100 150
℘ doz .. $15.00 18.00—dis 25&5 %
Hales' .... Nos. 11 12 13
℘ doz .. $27.00 33.00 45.00—dis 50&10&2 %
Draw Cut .. Nos. 5 2 6 8 10
Each .. $50.00 75.00 80.00 225.00 400.00—dis 20 %
American .... dis 20&10 %
Nos. 1 2 3 4 B 5
Each $5.00 7.00 10.00 25.00 50.00 60.00
Kieser's No. 55 .... $40 ℘ doz dis 40 %
Kieser's Gem .... $25 ℘ doz, dis 40 %
Kieser's Monarch .... $45 ℘ doz, dis 40 %
Kieser's Butcher .... $40 each, dis 20 %
Silver & Deming .... dis 25 %
Pennsylvania .... dis 40&10 %
Nos. 1 2 3 00
℘ doz $24.00 28.00 36.00 28.00
Beef Shavers (Enterprise Mfg. Co.) .... dis 20&10 %

Mincing Knives.
Am. (2d quality), ℘ gross, 1 blade, $7; 2 blades, $12; 3 blades, $18 .... net
Lothrop's .... dis 20&10 %
Smith's, ℘ doz, Single, $2.25; Double, $3 .... dis 33⅓&10 %
Cowles Hdw. Co .... dis 55 %

Molasses Gates.
Stebbins Patterns .... dis 70&10 %
Stebbins Genuine .... dis 67½&10 %
Stebbins Tinned Ends .... dis 40&10 %
Chase's Hard Metal .... dis 50&10 %
Bush's .... dis 20 %
Lincoln's Pattern .... dis 60&10 %
Weed's .... dis 15 %
Boss Nos. 1 2 3 4
$7.00 8.00 9.00 10.00 .. ℘ doz. dis 60&10&10 %

Nails. .... See Trade Report

Nuts and Washers.—(In lots less than 100 ℔ add ½c to list; 1 lb. boxes, add 1c to list.)
Square Nuts .... 8 c off list
Hexagon Nuts .... 8½c off list
Washers .... 7½c off list

Nut Crackers.
Table (Humason & Beckley Mfg. Co.) .... dis 33⅓ %
Blake's Pattern .... ℘ doz $2.00, dis 5 %
Turner & Seymour Mfg. Co .... dis 50 %

Oakum.—Is on 100 bales and over ⅛ % ℘ ℔.
Best .... ℘ ℔ 9 c
U. S. Navy .... ℘ ℔ 8 c
Navy .... ℘ ℔ 6¾c

Oilers.—Zinc and Tin .... dis 60 %
Brass and Copper .... dis 50 %
Malleable (Hammer's) .... ℘ doz. $5.00, dis 10 %
Prior's Patent or "Paragon" Zinc .... dis 60 %
Prior's Patent or "Paragon" Brass .... dis 50 %
Olmstead's, Tin and Zinc .... dis 60 %
Olmstead's, Brass and Copper .... dis 50 %
Broughton's, Zinc .... dis 60 %
Broughton's, Brass .... dis 50 %

Packing, Steam.
N. Y. Belting and Packing Co .... dis 20 %

Pencils.
Faber's Carpenters' .... high list, dis 50 %
Faber's Round Gilt .... ℘ gross $5.25, net
Dixon's Lead .... ℘ gross $4.50, net
Dixon's Lumber .... ℘ gross $6.75, net
Dixon's Carpenters' .... dis 40&10 %

Picks.
Railroad, 5 to 6, $11.00; 6 to 7, $12.00 .... dis 45 %
Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 .... dis 45 %

Picture Nails.
Brass Head, Sargent's list .... dis 50&10 %
Brass Head, T. & S. Mfg. Co .... dis 50 %
Porcelain Head, Sargent's list .... dis 50&10 %
Porcelain Head, Judd's list .... dis 40@40&10 %
Porcelain Head, T. & S. Mfg. Co .... dis 40 %
Niles' Patent .... dis 40 %

Pinking Irons .... ℘ doz 75c, net

Plaiting Machines.
Magic .... ℘ doz $10.00, net
Astor Plaiting Machine .... each $15.00, dis 20 %
Crown Plaiting Machines .... dis 25 %
6 in., $6.00; 10 in., $8.00 each.

Planes and Plane Irons.
Bench, First Quality .... dis 20 %
Bench, Second Quality .... dis 25 %
Molding .... dis 15 %
Bailey's (Stanley R. & L. Co.) new list, Jan. '79 dis 20&10 %
The Stanley (S. R. & L. Co.) new list, Jan. '79 .. dis 20&10 %
Bailey's "Victor" .... dis 20&10 %
Defiance Adjustable .... dis 20&10 %
Laflin Mfg. Co .... dis 35 %
Plane Irons, Butcher's .... $5.00 @ $5.25 to £
Plane Irons, Buck Bros .... $5.00 to £
Plane Irons, Auburn Tool Co .... dis 20 & 10 %
Plane Irons, The Globe Mfg. Co., "Baldwin Iron" .... dis 20 & 10 %
Plane Iron, Ohio Tool Co .... dis 20&10 %
Plane Irons, Sandusky Tool Co .... dis 20&10 %

Pliers and Nippers.
Button's Patent .... dis 33⅓ %
Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., $[illegible]; No. 4, 7 in., $21.00 ℘ doz .... dis 25 %
Humason & Beckley Mfg. Co .... dis 30&10 %
Gas Pliers .... dis 50 %
Eureka Pliers and Nippers .... dis 40 %
Russell's Parallel .... dis 25 %
P. S. & W. Cast Steel .... dis 33⅓&10 %
P. S. & W. Tinners' Cutting Nippers .... add 5 % dis 10 %

Plumbs and Levels.
Disston's .... dis 40 %
Stanley R. & L. Co.'s Pat. Adjustable .... dis 65&10 %
Stanley R. & L. Co.'s Non-Adjustable .... dis 65&10 %
Chapin's Patent Adjustable .... dis 65&10&10 %
Chapin's Non-Adjustable .... dis 65&10&10 %
Standard Rule Co.'s New Adjustable .... dis 65&10 %
Standard Rule Co.'s Non-Adjustable .... dis 65&10 %
Johnson's Patent Adjustable .... dis 65&10 %
Pocket Levels .... dis 65&10 %
Davis' Inclinometers .... dis 20 %

Post Hole and Tree Augers.
Samson Post Hole Digger .... ℘ doz $37.50, dis 20 %
Fletcher Post Hole Augers .... ℘ doz $36.00, dis 20 %
Vaughan's Post Hole—6 in., $33.60; 7, 8 and 9 in., $35.00 ℘ doz .... dis 20&10 %
Eureka Diggers ℘ doz $27.00 .... net
Leed's each $2.50 .... net

Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw, ℘ doz $19.00, dis 20 %
Disston's Pruning Hook .... ℘ doz $12.50, dis 20 %
E. S. Lee & Co.'s Pruner .... dis 33⅓ %
Pruning Shears .... ℘ doz $5.50 @ 6.00
Wheeler, M. & Co.'s Combination .... ℘ doz $12, dis 20 %
Dunlap's Saw and Chisel .... ℘ doz $9.00, dis 40 %

Pulleys.
Hot House and Tackle .... dis 65&10 %
Jap'd Screw .... dis 65&10 %
Brass Screw .... dis 70&10 %
Jap'd Side .... dis 65&10 %
Jap'd Clothes Line .... dis 60&10 %
Hay Fork, Solid Eye .... $4.50; Swivel, $5.00, dis 50&10 %
Hay Fork, "Anti Friction" .... $6.75, dis 10&10 %
Hay Fork, "F" Common and Pat. Bushed .... dis 20 %
Hay Fork, Tarbox Pat. Iron .... dis 20 %
Shade Rack .... dis 45 %

Punches.
Belt or Drive .... ℘ doz $2.00; 2.25, 2.50, dis 50 %
Bemis & Call Co.'s Cast Steel Drive .... dis 50&5 %
Bemis & Call Co.'s Springfield Socket .... dis 50&5 %

Spring.....₩ doz $7.00, dis 50&7½ %
Spring, Leach's Patent.....dis 15 %
Bemis & Call Co.'s Spring and Check.....dis 40 %
Solid, Tinners'.....₩ doz $1.44, dis 40 %

Rail.
Sliding, Door, Wrought Brass.....₩ ℔ 43c, dis 30 %
Sliding Door, Bronzed Wrt. Iron.....₩ foot 73c. dis 35 %
Sliding Door Iron, Painted.....₩ foot 40. dis 10&10 %
Barn Door....Inch.....½ ⅝ ⅞
Per 100 feet $2.60 3.60 5.60—dis 10 %
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$2.10 2.70 .30—net
Terry's Wrought Iron, 500 ₩ foot.....net

Razors.
J. R. Torrey Razor Co.....dis 15 %

Razor Strops.
Genuine Emerson.....dis 45 %
Badger's Emerson.....dis
Badger's (not Emerson).....dis 33⅓ %
Imitation Emerson.....₩ doz $2.00, dis 20 %
Hunt's.....dis 40&5 %
Chapman.....dis 15 to 2 %
Saunder's.....dis 10 %
Torrey's.....dis 20 %

Rivets.
Iron and Tinned, new list, Dec. 10, 1881.....dis 40 %
In bulk, new list, Dec. 10, 1881.....dis 40 %
Copper Rivets and Burrs.....dis 50 %
Nos.. 7 8 9 10 11 12 13 14 15
₩ ℔.. 49c 50c 52c 54c 56c 58c 60c £40 70c

Rivet Sets.
.....dis 33⅓&10 %

Rods.
Stair, Brass.....dis 25 %
Stair, Black Walnut.....60c. ₩ doz. dis 10 %

Rollers.
Barn Door, Sargent's list.....dis 6c&10&10 %
Acme (Anti-Friction).....dis 50 %

Rope.
Mnfs' List, June 19, 1883.....dis 10 ₩ ℔
Manila.....⅜ inch and larger ₩ ℔ 15½c
Manila.....⅜ inch ₩ ℔ 16 c
Manila.....¼ and 5-16 inch ₩ ℔ 16½c
Manila, Tar'd Rope.....₩ ℔ 15 c
Manila, Tar'd Lath Yarn.....₩ ℔ 15 c
Manila, Hay Rope.....₩ ℔ 14½c
Sisal.....⅜ inch and larger ₩ ℔ 13 c
Sisal.....⅜ inch ₩ ℔ 11½c
Sisal.....¼ and 5-16 inch ₩ ℔ 12 c
Sisal, Hay Rope.....₩ ℔ 11 c

Rules.

	Boxwood.	Ivory.
Chapin's, Standard, Stanley	dis 70&10 %	dis 55&10 %
Stephens	dis 70&10 %	dis 55%

Sad Irons.
No. 1 to 10.....₩ ℔ 9½c net
Self-Heating.....₩ doz $9.00 net
Self-Heating, Tallow'.....₩ doz $18.00 net
Gleason's Shield and Toilet.....dis 25 %
Mrs. Pott's Irons, Doubled Pointed.....dis 35 %
Mrs. Pott's Irons, Square Back.....dis 35 %
Enterprise Star Irons, new list, July 20, 1882...dis 35 %
Combined Fluter and Sad Iron....₩ doz $15.00, dis 15 %
Chinese Laundry (N. E. Butt Co.).....8½c, dis 15 %
New England.....90 dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½..$4.75 ₩ ream
Baeder & Adamson's Flint, 2, 2½ & 3..5.25 ₩ ream
Baeder & Adamson's Flint, Assorted..4.75 ₩ ream
Baeder & Adamson's Star.....5.75 ₩ ream
Baeder & Adamson's Emery..₩ ream $6.50 @ 11.50
Bartles Flint.....$4.75&$5.25 ₩ ream dis 35 %
Bartles Harrison, $4.75 ₩ ream.....dis 35 %
New England, same list as B. & A. Flint.....dis 35 %
Gage's.....dis 30&5 %

Sash Cord.
Common.....₩ ℔ 13c net
Patent.....₩ ℔ 15c net
Silver Lake, Hemp.....₩ ℔ 50c, dis 10&5 %
Silver Lake, White Cotton.....₩ ℔ 50c, dis 10&5 %
Silver Lake, Drab Cotton.....₩ ℔ 55c, dis 10&5 %
Raw Hide, ₩ foot, ¼ in., 5c.; 5-16 in., 7c.; ⅜ in., 10c.
.....dis 15 %
Steel Ribbon.....dis 10 %

Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross.....dis 33⅓ %
Ferguson's.....dis 33⅓ %
Walker's.....net
Hammond's Window Springs.....dis 25 %
Northup Window Springs, No. 1, $10.00 ₩ gross..dis 15 %
"Common Sense," Japanned, Coppered and Bronzed.....₩ gross $5.00 net
"Common Sense," Nickel Plated..₩ gross $10 00 net
"Universal".....dis 30 %

Sash Weights.
Solid Eyes, in 400 ℔ lots and over.....₩ ℔ 1¼c net

Sausage Stuffers or Fillers.
Miles "Challenge".....₩ doz $20, dis 40 %
Perry.....₩ doz, No. 15; No. 0, $21, dis 25&5 %
Draw Cut No. 4.....each $30.00, dis. 20 %
Enterprise Mfg. Co.....dis 20&10 %
Silver's.....dis 25 %

Saws.
Disston's Circular, Mill and Cross Cut.....dis 40 %
Disston's Hand, Panel, Rip, &c.....dis 20 %
Boynton's Lightning Cross Cuts, new list.....dis 40 %
Boynton's Circular and Mill.....dis 40 %
Boynton's Ice.....dis 25 %
Boynton's Lightning Hand, Panel and Rip.....dis 25 %
Wheeler & Clemson Mfg. Co.'s Hand.....dis 30 %
W. M. & C. Mfg. Co. Cross Cuts.....dis 30 %
Livingston's Butcher and Kitchen.....dis 20 %
Livingston's Framed Wood—
Nos 101 102 103 104 105
Per doz.....$10.00 8.40 10.00 7.50 6.20 net
Peace Circular and Mill.....dis 40 %
Peace Hand, Panel and Rip.....dis 25 %
Peace Cross Cuts.....dis 35 %
Peace Band Saws, all widths.....dis 10 %
Richardson's Circular.....dis 40 %
Richardson's Mill and X Cut.....dis 40 %
Richardson's Hand Panel, Butcher and Web Saws.....dis 25 %

Saw Frames.
White, Vermont.....₩ doz $1.50, dis 25&10%
Red, Polished and Varnished.....₩ doz $1.50, dis 10%
Saw Rods.....$10 list, dis10 & 10%

Saw Sets.
Boynton's Patent X Cut, per doz, $12.00; Hand Saw per doz, $10.00.....dis 25 %
Stillman's Genuine.....₩ doz $3.50 and $4.50 dis 10 %
Stillman's Imitation.....₩ doz $3.25, dis 30&10 %
Common Lever.....₩ doz $2.00, dis 30&10 %
Leach's.....No 0, $8.00; No. 1, $15.00, dis 15 %
Nash's.....dis 20&10 %
Hammer, Hotchkiss.....$5.50, dis 10 %
Hammer, Bemis & Call Co.'s new Patent.....dis 30&5 %
Bemis & Call Co.'s Lever & Spring Hammer..dis 30&5 %
Bemis & Call Co.'s Plate.....dis 10 %
Bemis & Call Co.'s Cross Cut.....dis 12½ %
Aiken's Genuine.....$13.00, dis 50&10 %
Aiken's Imitation.....$7.00, dis 50 %
Hart's Patent Lever.....dis 20 %
Disston's.....dis 20 %
Morrill's.....No. 1, $15 No. 4, $52, dis 40&5 %

Scales.
Hatch, Counter, No. 171.....₩ doz $42, dis 45 %
Hatch, Tea, No 161.....₩ doz $16.00, dis 45 %
Union Platform.....$6.00, dis 45 %
Fairbanks'.....dis 20 %
Richie Bros.....dis 20 & 10 %
Buffalo Scale Co.....dis 20&5 %
Forsyth Scale Co.....dis 25 %
Howe's.....dis 20&10 %
Chatillon's Grocers'.....dis 40 %
Chatillon's Eureka.....dis 25 %
Family Universal, 12 ℔, $30; 24 ℔, $36.....net
Family Favorite.....dis 30 %
Family, Turnbull's.....dis 30 %
Scale Beams, List of January 12, 1882.....dis 33⅓&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.), $6.50, dis 20&10 %
Box 1 Handle.....₩ doz $4.00, dis 10 %
Box 2 Handle.....₩ doz $6.00, dis 10 %
Defiance Box and Ship.....dis 20&10 %
Foot.....dis 45&10 %
Ship, common.....₩ doz $3.50 net
Ship, Providence Tool Co.....dis 10 %

Screen Corners.
Porter's Pat Window and Door Frame.....dis 33⅓

Screw Drivers.
Douglas Mfg. Co.....dis 20&10&10 %
Disston's.....dis 40 %
Disston's Patent Excelsior.....dis 40 %
Buck Bros.....dis 25 %
Stanley Rule & Level Co.'s, Varnished Hdls..dis 60&10 %
Stanley Rule & Level Co.'s, Black Handles..dis 50&10 %
Sargent & Co.'s.....dis 50&10 %
Gay's Double Action Ratchet
₩ doz, 4 in., $9.00; 5 in., $10.20; 6 in., $12.00—dis 35 %
Mallett & Co.'s Double Action Clutch
₩ doz, 4 in., $7.20; 5 in., $8.00; 6 in., $9.00—dis 15 %
Champion.....dis 25 %
Clark's Patent.....dis 25 %

Screws.
Flat H'd Iron, new list, Dec. 27, 1882.....dis 50&10 %
Round Head Iron, new list, Dec. 27, 1882.....dis 45&10 %
Flat Head Brass, new list, Dec. 27, 1882.....dis 50&10 %
Round Head Brass, new list, Dec. 27, 1882.....dis 45&10 %
Brass and Silver Capped.....dis 40 %
Japanned, list of Plain Screws.....dis 50&10 %
Coach, Patent Gimlet Point, 65&10 %, by the keg, dis 70 %
Coach, Common or Lag.....dis 60&5&10 %
Bed.....dis 10 %
Machine, Flat Head, Iron.....dis 55 %
Machine, Round Head, Iron.....dis 60 %
Bench, Iron.....dis 55&10 %
Bench, Wood, Beech.....₩ doz $5.00, dis 10 %
Bench, Wood, Hickory.....dis 20&10 %
Hand, Wood.....dis 20&10 %
Hand Rail, Sargent's.....dis 66⅔&10 %
Hand Rail, Humason, Beckley & Co.'s....dis 66⅔&10 %
Hand Rail, Am. Screw Co., list of Jan. 1, '81.....dis 70 %
Jack (Wilson's).....dis 25 %

Screw Window Balances.
R. B. Hugunin's, No. 1, $2.10; No. 2, $1.75; No. 3 $1.50.....₩ doz net

Scroll Saws.
Lester, $10.00.....dis 25 %
Rogers, $3.50.....dis 25 %

Shears and Scissors.
American (Cast) Iron.....dis 70@70&10 %
Pruning.....see Pruning Hooks and Shears.
Barnard's Lamp Trimmers.....₩ doz $3.75
Tinners'.....add 6 %, dis 10 %
Seymour's, List, Dec., 1881.....dis 60 %
Heinsch's, List, Dec., 1881.....dis 60 %
Heinsch's Tailor's Shears.....dis 33⅓ %
Wiss, Cutlery Co. St. Trimmers.....dis 75 %
Wiss, J., & Sons' list, Dec., 1881.....dis 60 %

Sheaves.
Sliding Door, M. W. & Co. list.....dis 45&2 %
Sliding Door, R. & E. list.....dis 60&10&2 %
Sliding Door, Patent Roller.....dis 60&10&2 %
Sliding Door, Patent Roller, Hatfield's.....dis 60&10&2 %
Sliding Door, Russell's Anti-Friction.....dis 60&10&2 %
Sliding Door, Moore's Anti-Friction.....dis 5c %
Sliding Shutter, R. & E. list.....dis 50&10&2 %
Sliding Shutter, Sargent's list.....dis 50&10 %
Sliding Shutter, Reading list.....dis 60&10 %
Moore's Anti-Friction (Hanging).....dis 50 %

Shovels and Spades.
Ames, New list, July 1, 1881.....dis 15 %
Griffiths.....dis 40 %
Old Colony.....dis 15 %
Payne Pettebone & Son, new list.....dis 40&10 %
Payne Pettebone & Son, R. R. Shovels.....dis 15 %
Remington's (Lowman's Patent).....dis 30 %
Rowland's.....dis 50&5 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list.....dis 60&30&2 %
Iron and Brass Head, P. S. & W.....dis 50&5&10 %
Polished Steel, new list.....dis 50&10&2 %

Slates.
Square Frames, by case.....dis 70 %
Less than a case.....dis 65&10 %

Spoke Shaves.
Defiance Metallic.....dis 20&10 %
Iron.....dis 45 %
Wood.....dis 30 %
Bailey's (Stanley R. & L. Co.), new list.....dis 30&10 %
Stearns'.....dis 30&10 %

Spoke Trimmers.
Bonney's.....₩ doz $10.00, dis 40&5 %
Stearns'.....₩ doz $9.00, dis 20&10 %
Ives'.....No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 15&10 %
Deuplass'.....₩ doz $9.00, dis 15 %

Spoons.
Basting.....dis 60&10 %
Riveted Table and Tea.....dis 60&10 %
Solid Table and Tea.....dis 60&10&5 %
Britannia.....dis 60&10 %
Reed & Barton.....dis 40&10&5 %
Holmes, Booth & Haydens.....dis 40&10&5 %
German Silver.....dis 30&10&5 %
Cast Steel, Silver Plated.....dis 33⅓&5 %
Tin (P. S. & W.), Teas.....$1.25 ₩ gross, net
Tin (P. S. & W.), Tables.....$2.00 ₩ gross, net
Tin (Cowles Hdw. Co.).....dis 10 %
Tin (Cowles Hdw Co.), case lots.....dis 20 %

Stocks and Dies.
.....dis 5&10 %
"Lightning" Screw Plate.....dis 10 %

Stone.
Hindostan No. 1, 6c; Axe, 8c.....dis 40 %
Hindostan Hacker Stone.....₩ gross $12.00 dis 10 %
Sand Stone.....₩ ℔ 6c, dis 33⅓&10 %
Washita Stone.....No. 1, ₩ ℔ 18c net
Washita Stone.....No. 2, ₩ ℔ 16c net
Washita Stone, Slips.....No. 1, ₩ ℔ 37c net
Arkansas Stone No. 1, 4 to 6 in.....₩ ℔ $1.35 net
Arkansas Stone No. 1, 6 to 9 in.....₩ ℔ $2.00 net
Turkey Oil Stone (Chase).....4 to 8 in., ₩ ℔, 60c, dis 10 %
Turkey Slips (Chase).....$1.75 ₩ ℔ dis 10 %
Lake Superior (Chase).....₩ ℔ 16c, dis 10 %
Lake Superior, Slips (Chase).....₩ ℔ 30c, dis 10 %
Grindstones, Family, Loring's.....dis 10 %

Stove Polish.
Joseph Dixon's.....₩ gross $6.00, dis 10 %
Gem.....₩ gross $4.50, dis 10 %
Gold Medal.....₩ gross $6.00, dis 25 %
"Mirror".....₩ gross $6.00, dis 4 %
Lustro.....₩ gross $4.75, net
Ruby.....₩ gross $3.75, net
Rising Sun.....₩ gross $5.75, net
Dixon's Plumbago.....₩ ℔ 8c, net
Loynton's Noon Day ₩ gross No. 1, large, $6.40 No. 2, small, $3; No. 3, medium, $4.

Squares.
Steel.....dis 50 %; full cases, dis 50&10 %
Iron.....dis 50 %; full cases, dis 50&10 %
Nickel Plated.....add $2.50 @ $4.00 ₩ doz, net
Try Square and T Bevels.....dis 50&10 %
Disston's Try Square and T Bevels.....dis 40 %
Winterbottom's Try and Mitre.....dis 20&10 %

Tacks, Brads, &c.
New List, Sept. 1, 1882.
Tinned Swedes Tacks.....dis 50 %
Tinned American Tacks.....dis 30 %
Swedes Tacks, all kinds.....dis 30 %
American Cut Tacks.....dis 30 %
Copper Tacks and Nails.....dis 30 %
Swedes Hungarian Nails.....dis 35 %
Gimp and Lace Tacks.....dis 30 %
Gimp and Lace Tacks, Tinned.....dis 30 %
Finishing Nails.....dis 25 %
Trunk and Clout Nails.....dis 25 %
Common and Patent Brads.....dis 20 %
Basket Nails.....dis 20 %
Brush Tacks.....dis 20 %
Leathered Carpet Tacks.....dis 20 %
Cigar Box Nails.....dis 20 %
Chair Nails.....dis 20 %
Double-pointed Tacks.....dis 40& 5%
Extra 10 % off list.

Tap Borers.
Common and Ring.....dis 20 %
Ives' Tap Borers.....dis 15&10 %
Enterprise Mfg. Co.....dis 20&10 %

Tapes, Measuring.
American.....dis 20 %
Spring.....dis 25&10 %
Chesterman's.....regular list dis 20&25 %

Thermometers.
Tin Case.....dis 75&10 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion).....dis 20&10 %
Wood Bottom.....₩ doz $10.00, dis 25&10 %
All Iron.....₩ doz $8.25, dis 15 %
Nashua Lock Co.'s.....₩ doz $16.00 dis 50&5 %
Wilson's.....dis 35 %
Clipper (Sargent & Co.).....₩ doz $18.00, dis 20 & 10 %

Toe Calks.
Winsted.....₩ ℔ 9c, dis 5

Tinners' Tools and Machines.
Machines (P. S. & W.).....list add 20 %
Tools (P. S. & W.).....add 6 %
dis 10 %

Transom Lifters.
Wollensak's Patent.....dis 35 %
Reiher's Patent, new list, Feb., 1883.....dis 20&10&10 %
Excelsior.....dis 50&10&2 %

Traps.
Game, Newhouse.....dis 35 %
Game, Oneida Pattern.....dis 60 %
Game, Blake's Patent.....dis 40&5 %
Mouse, Wood, Choker.....₩ doz holes, 14c
Mouse, Round Wire.....₩ doz $1.50, dis 10 %
Mouse Cage, Wire.....₩ doz $2.50, dis 10 %
Mouse, Catch-em-alive.....₩ doz $2.50, dis 10 %
Mouse, "Bonanza".....per gross $10.00 net
Rat, "Decoy".....₩ doz $10.00, dis 10 %

Trowels.
Lothrops' Brick and Plastering.....dis 25 %
Reed's Brick and Plastering.....dis 15 %
Disston's Brick and Plastering.....dis 20 %
Peace's Plastering.....dis 15 %
Clement & Maynard's.....dis 20 %
Rose's Brick.....dis 15 %
Brades' Brick.....dis 25 %
Worrall's Brick and Plastering.....dis 20 %
Garden.....dis 55 %

Triers.
Butter and Cheese.....dis 25 %

Trucks (Warehouse, &c.
Penfield Block Co.'s list, 1882.....dis 35 %

Vises.
Solid Box.....dis 35 %
Solid "Crown" (A. H. Hilditch).....40 to 100 ℔, 15c net
Solid, Peter Wright's.....15&5c
Solid, Wilkinson's.....14@15c
Parallel, Parker's.....dis 10 %
Parallel, Wilson's.....dis 35&10 %
Parallel, Howard's.....dis 20&10 %
Parallel, Merrill's.....dis 15 %
Parallel, Sargent's.....dis 60&10 %
Parallel, Backus and Union.....dis 40 %
Parallel, Oval Slide.....dis 40 %
Parallel, Double Screw Leg.....dis 15&10 %
Parallel, Prentiss.....dis 25 %
Parallel, Simpson's Adjustable.....dis 25&5 %
"Family," List.....net
Saw Filers, Bonney's.....₩ doz $24.00, dis 20&10 %
Saw Filers, Stearn's.....dis 20&10 %
Saw Filers, Hopkins'.....₩ doz $17.50, dis 10 %
Saw Filers, Reading.....dis 40&10 %
Cowell Hand Vises.....dis 20 %
Richardson's Vise and Anvil.....dis 25 %

Washer Cutters.
Smith's Patent.....₩ doz $12.00, dis 25 %
Johnson's.....₩ doz $11.00, dis 33⅓ %
Penny's.....₩ doz Pol. $17.40; Jap'd, $16.50, dis
Appleton's.....₩ doz $16.00, dis 50&10 %

Washers.—See Nuts and Washers.

Well Wheels......dis 60&10 %

Wire.
Brass and Copper.....dis 30 %
Market, Bright and Annealed.....dis 53½ @ 55 %
Market, Coppered.....dis 47½ @ 50 %
Market, Galvanized.....dis 42½ @ 45 %
Market, Tinned, Tinned list.....dis 44 @ 47½ %
Stone, Bright and Annealed, Nos. 9 to 18..dis 52 @ 57½ %
Stone, Bright and Annealed, Nos. 19 to 26..dis 60 @ 62½ %
Stone, Bright and Annealed, Nos. 27 to 36..dis 65 @ 67½ %
Stone, Galvanized, Nos. 19 to 30.....dis 42½ @ 45 %
Stone, Tinned, Tinned list.....dis 44 @ 47½ %
Tinned Broom Wire.....dis 55 @ 57½ %
Cast Steel Wire.....dis 45 @ 47½ %
Annealed Fence, Nos. 8 & 9.....dis 52½ @ 55 %
Annealed Grape, Nos. 10 to 14.....dis 52½ @ 55 %
Fence Staples.....₩ ℔ 6½ @ 6¾c
Fence Staples, Galvanized.....₩ ℔ 6¾ @ 6¾c
Stubs Steel Wire.....$6.00 to £ dis 30 %
Japanned Barb Fence.....₩ ℔ 6¼c
Galvanized Barb Fence.....₩ ℔ 7¼c
Steel Music Wire, Nos. 7 to 30.....$1.10 ₩ ℔
Picture Wire, T. S. & J.....dis 40 %
Clothes Line Wire, Galvanized.....₩ coil 25 ℔ 4c net
Wire Cloth, green, drab and black, ₩ sq. ft., 2c. @ 2½c.....net

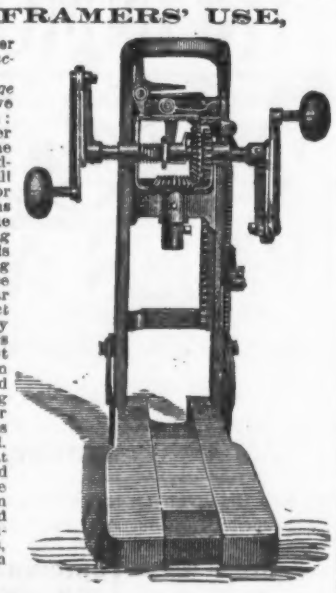
Wrenches.
American Adjustable.....dis 45 %
Baxter's Adjustable "B," list Jan., 1880.....dis 20&5 %
Baxter's Diagonal.....dis 20&5 %
Coes' Genuine.....dis 50&5 %
Coes "Mechanics".....dis 50&10&5 %
Coes' Pattern, Malleable.....dis 75 %
Coes' Pattern Wrought.....dis 60 @ 65 %
Girard Standard.....dis 60 %
Girard Agt.....dis 70 %
Bemis & Call's Patent Combination.....dis 20 %
Bemis & Call's Merrick's Pattern.....dis 35 %
Bemis & Call's Brigg's Pattern.....dis 25 %
Bemis & Call's Cylinder or Gas Pipe.....dis 40 %
Van Wagoner & Williams' Basin.....₩ doz $4.50
Aiken Pocket (Bright).....$6.00, dis 50&10 %
The Favorite Pocket (Bright).....₩ doz $4, dis 40 %
Webster's Patent Combination.....dis 25 %
Taylor's Farmers'.....dis 25 %

Wringers.

	Per doz.
Universal, XX, No. 3½	$2.00
Universal, XX, No. 2	45.00
Universal, XX, No. 1½	51.00
Universal, XX, No. 1	56.00
Peerless, no Cogs, No. 1	42.00
Peerless, with Cogs, No. 2½	45.00
Peerless, with Cogs, No. 2	48.00
Peerless, with Cogs, No. 3	54.00
Peerless, with Cogs, No. 4	66.00
Eureka, No. 2	42.00
Novelty No. 2, for Common Tubs	$42.00
Novelty No. 3, for Common Tubs	48.00
Excelsior No. E, for Stationary Tubs	41.00
Excelsior No. F, for Stationary Tubs	57.00
Excelsior No. A, with Folding Bench	60.00
Excelsior No. B, with Folding Bench	66.00

Lots of 1 doz., dis 40 %; lots of 5 doz., dis 45 %; ₩ doz.

SAUNDERS' PATENT
AUTOMATIC BORING MACHINES
FOR BUILDERS' AND FRAMERS' USE,



are universally acknowledged to be superior to all other *Boring Machines*, and we *guarantee* to give better *satisfaction* than any other machine.

Ship Builders, House Builders, Dock Builders, Bridge Builders, Carpenters and *Farmers* please notice what we claim for our machine, and we guarantee all thatwe claim: First, that it will do nearly double the work of any other machine in the same length of time, with greater ease to the operator; that we can regulate the speed of the bit according to the size of the same, or to suit the operator; it will drive the bit any required speed; it will drive the bit or auger to any required depth, and the bit or auger returns from the hole by the same automatic motion without the operator stopping the machine; at the same time clearing itself and leaving the hole entirely free from chips; it is gauged to bore such a depth as may suit the operator, boring two or more holes at exactly the same depth after being once set, without any attention from the operator; it is an angular machine and will bore on any angle; it is the most compact machine; it can be placed in so small a compass as to occupy but little room in a carpenter's tool chest, and while in this compact form it can be carriedin the hand with the greatest ease and convenience; it is the most durable machine, from the fact that we use the best material in its construction, and each part can be duplicatedin case of accident by sending directly to us. We finish the ironwork with a baked or heated Japan finish which enables it to withstand all kinds of weather, the woodwork being rubbed in oil and shellaced. They are the cheapest Boring Machines in the world for what they can do. We are introducing the Gladwin Improved Auger in connection with this machine. This auger is the best Boring Machine Auger made, being a self-clearer in gummy or knotty wood. We offer the Borer, boxed and delivered on board cars, for $6. with full set Gladwin Improved Augers, 18 qrs., $9; or with extra finished beds, $6.50, and full set augers, 18 qrs., $9.50. A discount given for large orders. Send for Descriptive Catalogue.

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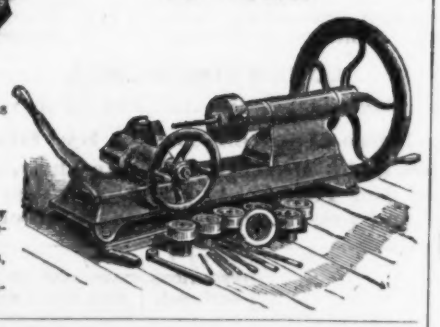
LOUDERBACK, GILBERT & CO., 33 Chambers St., New York.
TALLMAN & McFADDEN, 607 Market Street, Philadelphia.
BUHL, SONS & CO., Detroit, Mich.
A. W. BINGHAM & CO., Cleveland, Ohio.
GORDON HARDWARE CO., San Francisco, Cal.
HODGE & HOMER, 47 Randolph Street, Chicago, Ill.

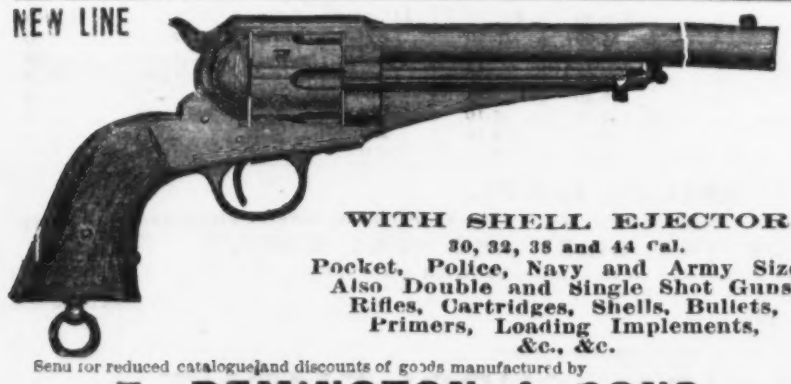
WILEY & RUSSELL MFG. CO.,
Greenfield, Mass.,

LIGHTNING
SCREW CUTTING MACHINERY
AND TOOLS.



Lightning Screw Plates. Sets of Taps and Dies from small wire sizes up.
"O" Plate cuts to ¼ inch.
"A" and "A1" cuts to 7-16 inch.
"B" cuts to ½ inch.
"C" " 1
"D" cuts to 1¼ inch.
"O" Bolt Cutter, hand or power. A pulley may be substituted for balance wheel for power if required. Cuts to ¼ inch.
Upright Drilling Machines, Punching Presses, Tire Upsetters and Benders.
Whitworth, Philadelphia or V Threads, as required.

NEW LINE



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Rifles, Cartridges, Shells, Bullets,
Primers, Loading Implements,
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Twelfth and Buttonwood Streets, PHILADELPHIA.

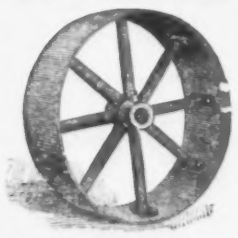
Manufacturers of

IRON & BRASS WOOD SCREWS.

Quality, finish and tests as to strength guaranteed equal to any in the market.

With improved facilities and largely increased capacity for production, we can fill orders promptly, and invite inquiries for discounts. A full line in stock.

The Medart Patent Wrought Rim Pulley



THE LIGHTEST, STRONGEST, BEST BALANCED, AND CHEAPEST IN THE WORLD.

We make Whole Pulleys from 9 inches to 96 inches diameter, and Split Pulleys from 12 inches to 72 inches diameter. All widths of face up to 32 inches crowning and up to 36 inches straight: also tight and loose and Double Arms.

Absolute Satisfaction Guaranteed.

SEND FOR PRICE LIST.

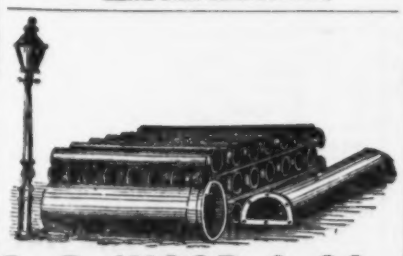
MEDART PAT. PULLEY CO., 1206 to 1214 N. Main St., St. Louis, Mo.

WROUGHT IRON TACKLE BLOCKS.
Swivel Hooks for Rope or Chain,
POLISHED GROOVES, ALL SIZES IN STOCK.
Also Pulley Blocks for Wire Rope,
Headquarters for the
IRVING BRAND WOODEN PULLEY BLOCKS,
McCOY & SANDERS, Manuf'turers,
26 Warren Street, New York.

GEO. B. CARPENTER & CO
DEALERS IN
SUPPLIES
FOR ROLLING MILLS
MANUFACTORIES
MINING
COMPANIES
& RAILWAYS
WESTERN AGENTS FOR
H.W. JOHNS'
ASBESTOS
LIQUID PAINTS
STEAM PACKING. MILL BOARDS
ROOFING, BOILER COVERING
GASKETS, FIRE PROOF COATINGS
CEMENTS & C.
SEND FOR CIRCULARS
202 & 208 S. WATER ST. CHICAGO.
MENTION THIS PAPER

AGENTS IN ALL FOREIGN COUNTRIES.

HOWSONS' PATENT OFFICES.
119 South Fourth Street,
PHILADELPHIA
Branch Office, 605 Seventh St. Washington, D.C.
H. HOWSON, Engineer and Solicitor of Patents.
C. HOWSON, Attorney at Law and Counsel in Patent Cases.
SEND FOR CIRCULARS.



R. D. WOOD & CO.,
Philadelphia,
Manufacturers of
Cast Iron Pipe
FOR WATER AND GAS,
Lamp Posts, Valves, &c.,
Mathew's Pat. Anti-Freezing Hydrants.
400 CHESTNUT STREET.

THE LITTLE GIANT

Wagon Tire Upsetter.
The Cheapest and Best.
LITTLE GIANT MFG. CO.,
Send for Circular. Millport, N. Y.

HOOSIER SAW WORKS
W. B. BARRY Saw Manufacturer
132 & 134
South Pennsylvania St.,
Indianapolis, Ind.

Swages, Gummers, Files, Belting & Emery Wheels.

ALL WORK FULLY WARRANTED.

Best, Cheapest and Fastest Selling
POTS
On the Market.
Send for discounts.
R. C. PURVIS,
407 CHERRY ST.,
Philadelphia.

MACHINERY FOR
Straightening and Cutting Wire
Of all Sizes to any Length.
Send for Catalogue.
JOHN ADT,
New Haven, Conn., U. S. A.

Prouty's Patent
PEERLESS FORCE PUMP.
Has Self-Adjustable Foot Rest.

NEW AUTOMATIC COMPENSATING PACKING.

It will throw a continuous jet FROM FORTY TO SIXTY FEET. A new pattern jet and spray nozzle is sent with each pump.

Especial attention is called to the material and workmanship exhibited in these pumps.

LIST PRICE, $8.

THE NEW ENGLAND BUTT CO.
PROVIDENCE, R. I.
NEW YORK OFFICE, 99 Chambers St.

THE AMERICAN BOLT AND SCREW CASE CO.,
DAYTON, - - - OHIO.
MANUFACTURERS OF
REVOLVING BOLT AND SCREW CASES.

We are the only manufacturers of Bolt cases and the only parties who make lists of Bolt or Screw Cases to suit stock of purchaser without extra charge. All goods guaranteed. Send for Illustrated Circular.

PRINCIPAL AGENTS.

Markley, Alling & Co., Chicago; Ducharme, Fletcher & Co., Detroit, Mich.; Burger & Baumgard, New York City; Lloyd, Supplee & Walton, Philadelphia, Pa.; Buehler, Bomright & Co., Philadelphia, Pa.; Samuel C. R. Cook & Co., Baltimore, Md.; Bindley Hardware Co., Pittsburgh, Pa; A. F. Shapleigh & Cantwell Hardware Co., St. Louis, Mo.; Farwell, Ozmun & Jackson, St. Paul, Minn.; Howell, Gano & Co., Cincinnati, O.; Pappenheimer Hardware Co., Cincinnati, O.; Hall & Wilies Hardware Co., Kansas City, Mo.; Pratt & Co., Buffalo, N. Y.; Seeberger, Breakey & Co., Chicago, Ill.; H. O. Stratton, Boston, Mass.; Shulz & Hosen, St. Joseph, Mo.; Wyeth Hardware Co., St. Joseph, Mo.; A. Baldwin & Co., New Orleans, La.; Gorden Hardware Co., San Francisco, Cal.; Kilbourn, Jones & Co., Columbus, O.; Morley Bros., East Saginaw, Mich.

We are also extensive manufacturers of **Fruit Can Sealing Wax.** Send for Circulars and Prices.

Very Respectfully,

THE AMERICAN BOLT & SCREW CASE CO.

MORSE TWIST DRILL AND MACHINE CO.
NEW BEDFORD, MASS., Sole Manufacturers of
Morse Patent Straight-Lip Increase Twist Drill,
Beach's Patent Self-Centering Chuck, Solid and Shell Reamers,
BIT STOCK DRILLS,

DRILLS FOR COES, WORCESTER, HUNTER AND OTHER HAND DRILL PRESSES. BEACH'S PATENT SELF-CENTERING CHUCKS, CENTER AND ADJUSTABLE DRILL CHUCKS, SOLID AND SHELL REAMERS. DRILL GRINDING MACHINES. TAPER REAMERS, MILLING CUTTERS AND SPECIAL TOOLS TO ORDER.

All Tools exact to Whitworth Standard Gauges.

GEO. R. STETSON, Supt. EDWARD S. TABER, Treas.

BEECHER & PECK
Successors to Milo Peck, Manufacturers of

PECK'S DROP PRESS

PECK'S DROP LIFTER is the only one which has its parts cushioned. Being thus cushioned they are the most durable Lifter in the market.

Can be attached to any drop now in use.

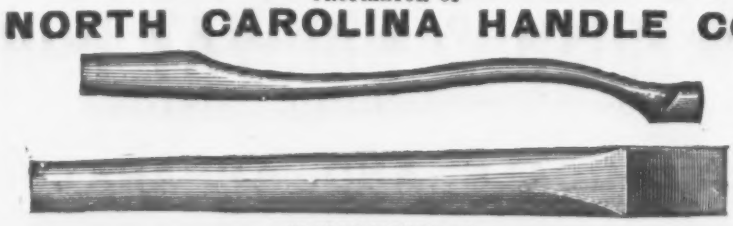
Send for Illustrated Catalogue.

Cor. Lloyd and River Sts. New Haven, Conn.

MATTHIESSEN & HEGELER ZINC COMPANY,
LA SALLE, ILLINOIS,
MANUFACTURERS OF
Refined Spelter, Sheet Zinc and Sulphuric Acid.

ALL ORDERS FILLED PROMPTLY.

V. G. HUNDLEY,
PROPRIETOR OF
NORTH CAROLINA HANDLE CO.



MANUFACTURER OF
Handles and Spokes,
79 Reade Street and 97 Chambers Street, - - - - NEW YORK.
HARDWARE COMMISSION MERCHANT.

PHILADELPHIA.

(Corrected Weekly by Lloyd, Supplee & Walton.)

Terms, 30 days. For 60 or 90 days, interest added at 10% per cent. per annum.

Anvils.
Peter Wrights. ₩ lb ....11 @ 11½c
Over 200 lbs 11½c
Trenton 10½
Eagle Anvils, American, 100 ....dis 20 %

Apple Parers.
Globe Apple Pearers ....$6.00 net
Penn Apple Parers ....$6.00 net
Lots of 10 to 25 dozen special prices.
Bay State Peach Parer $9 00

Axes.
Hunt's Kentucky and Yankee, per doz $8.50 @ 9.00
Robert Mann ....$8.00 @ 8.50
Richland Chief .... " $7.50 @ 8.00
Beveled Axes .... " add 50c net
Double Bit Axes ....net " $14.50 @ 15.50

Augers and Auger Bits.—New List January 7, 1880.
Bates' Nut Augers ....dis 45&10 %
Cook's Augers ....dis 40&10 %
Watrous' Ship Augers ....dis 15 %
Benjamin Pierce Auger Bits ....dis 40 %
Griswold Auger Bits ....dis 45&10 %
Cook's " ....dis 40&10 %
Jennings' " ....dis 10, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₩ doz..dis 25&10 %
Stearns' Pat. Hol. Augers, list $48 ₩ doz..dis 20&10 %

Balances.
Light and Common ....dis 15&10 %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells ....dis 70 %
Swiss Pattern Hand Bells ....low list dis 40&10 %
Connell's Door Bells ....dis 15 & 10 %
Gt. Western & Kentucky Cow new list ....dis 60 %

Boring Machines
Upright, without Augers ....List 5.50 }
Angular, without Augers .... " 6.75 } dis 45@50 %

Bolts.—Eastern Carriage Bolts ....dis 80 @ 80 & 10 %
Philadelphia " ....new list dis 70&10 %
Stanley, Wrought Shutter ....dis 50&10 %

Braces.—Barber's ....dis 40&5 %
Backus ....dis 50 %
Spofford ....dis 50&5 %
American Ball ....dis 55 %

Butts.—Cast Fast Joint, Narrow ....dis 45&10 %
" " Broad ....dis 45&10 %
Cast Loose Joint, Narrow ....dis 55&10 %
" " Broad ....dis 55&10 %
" Acorn, Loose Pin ....dis 50&10 %
" " " Jap'd ....dis 60&10 %
" Mayer's Loose Joint ....dis 60&10 %
Wrought Loose Pin ....dis 55&10 %
" Table Hinges and Back Flaps ....dis 50&10 %
" Narrow, Fast ....dis 50&10 %
" Loose Joint ....dis 55&10 %

Blind Butts.
Parker ....dis 70 & 2 %
Clark ....dis 70 & 2 %
Shepard ....dis 70 %
Lull & Porter ....dis 70&10 %
Huffer's ....dis 50 %

Chains.—German Halter and Coil, list December 31, 1881 ....dis 45@ 50 %
Galvanized Pump ....₩ lb 9½c net
Best Proof Coil Chain—English.
₩ lb .... 13 10 8½ 7½ 7¼ 7 gold
5-16 ¼ 5-16 ⅜ 7-16 ½ in.

Chisels.—Socket Framing ....dis 65&10 %
Socket Firmer ....dis 65&10 %
Butcher's ....$5.00 to £ gold

Casters.—Bed (new list July 1, 1880) ....dis 45@50 %
Plate ....dis 45@50 %

Coffee Mills.—Box and Side, new list Jan. 1, 1880 ....dis 45 %
Enterprise ....dis 25 %

Cutlery.—Walden Pocket ....new list net
Penna. Knife Co ....new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.
Hart Mfg. Co.'s ....dis 65&10 %
Adjustable Handle ....dis 20 %

Fry Pans.
Tinned ....dis 45 %
₩ doz. $3.50 4.00 4.50 5.00 5.50 6.50 7.50 9.00 10.00
No. 0 1 2 3 4 5 6 8
Burnished ....dis 60, 10 & 5 %
₩ doz. $3.00 3.75 4.25 4.75 5.25 6.00 7.00 8.00 9.00
No. 0 1 2 3 4 5 6 7 8

Files.
Nicholson ....dis 50 %
Disston ....dis 50 %
Butcher ....

Fluting Machines.
Eagle—3½ in. roll ....each, $2.15 }
" —5½ in. roll .... " 2.85 } dis 25 %
Crown—4½ in. roll .... " 3.40 }
" —6 in. roll .... " 4.00 } dis 25 %
" —8 in. roll .... " 6.50 }
Geneva Fluter ....dis 25 %
Favorite com. Fluter & Sad Iron ....₩ doz $10.50 net

Hammers.
Yerkes & Plumb's, new list ....dis 30 %
Maydole Hammers ....dis 15 %
Howell A. E. Nail Hammers ....per doz. net $3.75

Handles.
Disston Loop Handles Crosscut ....33c pair net
Boynton Loop Handles Crosscut ....33c pair net

Hatchets.
Yerkes & Plumb, new list ....dis 30 %
Hunt ....dis 25 %

Hinges.
Strap and T ....dis 55 & 10 %

Horse Nails. Nos. 5 6 7 8 9 10
Globe ....24 21 19 18 17 16 dis 12½ %
Vulcan ....26 23 21 20 19 18 dis 12½ %
Ausable ....30 27 25 24 23 22 dis 30&10 %
" Pol'ed and P't'd & Blued & P't'd ..31 28 26 25 24 23 dis 30&10%
Clinton ....23 21 20 19 18 dis 30&10%
" Polished & Pointed .24 22 21 20 19 dis 30&10%

Hay and Straw Knives.
Lightning ....per doz, net $18.00
Electric .... " " 18.00
Wadsworth .... " " 10.50
Walton Straw Knives .... " " 17.00

Locks and Knobs.
Branford ....new list dis 45, 10& 2 % cash
Gaylord Cabinet ....dis 25&2 % cash
American Padlocks ....dis 30, 10&2 % cash
Scandinavian Padlocks ....dis 50 %
₩ doz. $5.00 5.50 6.50 7.50 8.50 10.00 12.50 } dis 60 %
No. .... 57 58 59 60 61 62 63 }
₩ doz. ....$18.00 26.00 33.00 } dis 60 %
No. .... 64 65 66 }

Lanterns.
Buckeye ....Large list net; small list net
Tubular ....No. 0, $8.65; No. 1, $10.15 ₩ doz net
Guards, 35 cents extra per doz. net.

Lawn Mowers.—Pennsylvania .... }
Philadelphia .... } new list
Excelsior .... } dis 30 %

Lawn and Garden Pumps.
Holland Patent ....List $5.00 dis 10 %

Mattocks.
Long and Short Cutter ....new list ....45 %
Pennsylvania Pattern ....dis 4 %

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets ....dis 25 %
Stebbins' Gates ....dis 70&10%
Lincoln's " ....dis 60&10 %
Landers, Frary & Clark's Petroleum ....dis 20&10 %
Brass Liquor Cocks, new list Jan. 1 1882 ....dis 45 %
Cork Lined " ....dis 70 %

Meat Cutters.
Dixon's ....dis 25&5 %
Woodruff ....dis 25&5 %
Stowe ....dis 25&5 %
Hale's ....new list, dis 50, 10& 2 cash
American ....dis 25 %
Stuffers ....dis 25&5 %
Enterprise Stuffers ....dis 25 %

Planes.—Sandusky Tool Co ....dis 20 %
Ogontz ....dis 25 %
Ohio & Auburn ....dis 20 %
Bailey (S. R. & L. Co.) ....dis 20&10 %

Plane Irons.—Ohio Tool Co ....dis. 20 %
Butcher's $5.00

Plumbs and Levels.
Stanley's Adjustable ....dis 65&10 %
" Non-Adjustable ....dis 65&10 %

Picks.—New list ....40 %

Razor Strops.
Lamont Combination ....per doz. $4.00
" " ....1 gross lots $42.00
Imitation Emerson ....per doz. 2.00

Rules.—Stanley Boxwood ....dis 70 &10 %
Stanley Ivory ....dis 55&10 %

Steelyards.—Hart's Pattern ....dis 33⅓&10 %
₩ doz. $14.50 17.75 21 00 26.50 31 00 35.50
Lbs 50 100 150 200 250 300
American Pattern ....dis 33⅓&10 %
₩ doz. $8.00 10.25 13.75 15.60 10.75 19.50
Lbs 50 100 150 200 250 300

Squares.
Steel and Iron ...dis 50; full case, dis 50&10&2 for cash
Try Squares, Stanley ....dis 50&10 %
Disston's Try Squares ....dis 40 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened ....₩ doz $9.00 }
Clipper No. 10, Bronzed Blade, Boxed and Sharpened ....₩ doz $8.50 } 30
Clipper No. 5, Painted Red, Boxed and Sharpened ....₩ doz $8.00 }

Saws.—Disston's Hand, Panel and Rip ....dis 20 %
Disston's Circular ....dis 40 %
Cross-Cut No. 2, Plain Tooth ....dis 40%
" Patent Tooth ....dis 40%
" Champion Tooth ....dis 40%
Boynton's Lightning Cross Cut, new list ....dis 40 %
" Lightning Buck Saws, cross bar ....dis 40 %

Shovels and Spades.
Oliver Ames & Sons, new list ....dis 15 %
Griffiths ....dis 50@ 50&5
Rowland ....dis 50@ 50&5

Sad Irons.—4 to 10 lbs ....₩ lb 3¼c
Mrs. Potts' Patent ....dis 35 %

Stone.
Washita Extra ....₩ lb 28c net
" No. 1 .... " 18c
" No. 2 .... " 16c
" Slips .... " 37c
" Axe .... " 130 net
Hindostan Oil Stone No. 1 ....₩ lb 6c }
" Axe Stone .... " 8c } dis 33⅓ %
Slips .... " 10c }

Screws.
Flat Head Iron, new list Dec. 27 ....dis 50 & 10%
Flat Head Brass, new list Dec. 27 ....dis 50 & %
Round Head Brass, new list Dec. 27 ....dis. 40 & 10 %
Round Head Iron, new list Dec. 27 ....dis. 45 & 10 %

Spoons.
Plated ....dis 40, 10 & 5 %
German Silver ....dis 30 & 10 %
Britannia, Boardman's ....dis 60 %
" Parker's ....dis 60&10 %
Tinned ....dis 10 %

Springs.—Torrey ....dis 50 %
Gem No. 3 small Jap'd ....$2.00 }
" No. 2 medium Jap'd ....2.75 } dis 50 & 10 %
Coil No. 0, per gross net $6.00
Other Standard Springs ....dis 50&10 %
Warner Door Springs, per doz. net 1.75
Standard Spring Hinges—
Single No. 0, per doz. net 1.25
" No. 1. " " 1.50
Other Standard Spring Hinges ....dis 25&10 %

Stocks and Dies. ....dis 10&5 %

Stove Polish.—Gem ....₩ gross, $4.50, dis 5 %
Dixon ....6.00, dis 10%
Fire Fly ....$3.00 gross net

Tacks. ....dis 30&10 %
Shoe Nails—4-8, and over 8c .... }
" " 3½-8, and under 90 .... } 10 %
Double Pointed Tacks ....dis 40&5 %

Traps.
Genuine Oneida—Newhouse ....dis 35 %
Im. Oneida—Newhouse list, first qual. dis 55&5 @ 60 %

Vises.—Solid Box, Trenton new list ....dis 35 %

Wrenches.—Agricultural ....dis 70 %
Coes' Genuine ....dis. 50&3 %
Coes' Mechanics' ....dis. 50&10&3 %
" " Mall. Bar ....dis 75 %

Wire.
Bright or Ann'd, No. 0 to 18 ....dis 52½ to 55 %
" " No 19 to 26 ....dis 60 to 62½ %
" " No. 27 to 36 ....dis 65 to 67½ %
Coppered, 0 to 18 ....dis 47½ to 50 %
Tinned Broom Wire ....dis 55 to 57½ %
Galvanized Barb Wire 9cts
Painted Barb Wire 8c
Galvanized No. 7 to 18 ....Market List, dis 42½ to 45 %

Wringers.
Peerless No. 2½ $42.00
" No. 2 ....45.00
Universal No. 2½ 42.00
" No. 2 ....45.00
Novelty No. 2, for common tubs 42 00
" No. 3, " 48.00
Excelsior E, for stationary tubs 51.00
" F " " 57 00
In lots of 1 doz. $3.00 doz. dis. from above price.

PITTSBURGH.

Merchant Iron.

TERMS.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

For fluctuations and discounts on card rates see weekly Pittsburgh Trade Report.

The following are card rates.

Flat Bar.
1½ to 4 by ⅜ to 1 inch 2.50
4½ to 6 by ⅜ to 1 " 2.60
1⅜ to 6 by 1⅛ to 1¼ " 2.90
1¼ and 1⅜ by ⅜ to ¾ " 2.60
1 and 1⅛ by ⅜ to ¾ " 2.70
⅝, ¾ and ⅞ by ⅜ to ⅝ inch 2.90

Rounds and Squares.
1 to 1⅝ ....2.50 | ⅝ to 9-16 ....2.70
2 to 2⅝ ....2.70 | ½ to 7-16 ....2.90
2¾ to 3¼ ....3.00 | ⅜ 3.10
3⅜ to 4 ....3.50 | 5-16 ....3.30
4¼ to 5 ....4.00 | ¼ 3.50
⅝ to ⅞ ....2.60 | 3-16 ....5.50

Oval Iron.
⅞ to 1⅛ ....2.90 | ½ 3.30
⅝ to ¾ ....3.10 | ⅜ 3.70

Half Oval and Half Round.
⅞ to 1¼ inch ....3.20 | ½ inch 4.00
⅝ to ¾ " ....3.70 | ⅜ " 5.50

Horse Shoe.
⅜ to 1⅛ by 5-16 to ⅞ inch 3.50

Wagon Box Iron.
⅞ Inch, Nos. 13 and 14 ....3.70
⅞ " " 11 and 12 ....3.50
¾ " " 13 and 14 ....4.00
¾ " " 11 and 12 ....3.80
⅝ " " 13 and 14 ....4.40
⅝ " " 11 and 12 ....4.10

Heavy Bands.
3½ to 6 by ¼ and 5-16 inch 2.70
1⅛ to 3¼ by ¼ and 5-16 " 2.70
1 to 1⅜ by ¼ and 5-16 " 2.80
¾ to ⅞ by ¼ and 5-16 " 3.00
⅝ and ⅝ by ¼ and 5-16 " 3.50

Light Bands.
1½ to 6 by ⅛ to 3-16 ....3.00
1⅛ to 6 by Nos. 11 and 12 ....3.10
1 to 1⅜ by ⅛ to 3-16 ....3.10
1 to 1⅜ by Nos. 11 and 12 ....3.20
⅞ and 13-16 by ⅛ to 3-16 ....3.40
⅞ and 13-16 by Nos. 11 and 12 ....3.50
¾ and 11-16 by ⅛ to 3-16 ....3.70
¾ and 11-16 by Nos. 11 and 12 ....3.80
⅝ and 9-16 by ⅛ to 3 16 ....4.00
⅝ and 9-16 by Nos. 11 and 12 ....4.10
½ inch by ⅛ and 3-16 ....4.30
½ inch by Nos. 11 and 12 ....4.40

Hoop Iron.
1½ to 4, Nos. 13, 14 and 15 ....3.30
1¼ to 2, Nos. 16, 17 and 18 ....3.40
1¼ to 2, No. 19 ....3.50
1¼ to 2, No. 20 ....3.60
1¼ to 2, No. 21 ....3.70
1¼ to 2, No. 22 ....3.70
15-16 1, and 1⅛, Nos. 13, 14 and 15 ....3.80
15-16, 1, and 1⅛, Nos. 16, 17 and 18 ....3.50
15-16, 1, and 1⅛, Nos. 19 and 20 ....3.60
15-16, 1, and 1⅛, No. 21 ....3.70
15-16, 1, and 1⅛, No. 22 ....3.80
⅞, Nos. 13, 14 and 15 ....3.90
⅞, Nos. 16, 17 and 18 ....3.70
⅞, Nos. 19 and 20 ....3.80
⅞, No. 21 ....3.90
⅞, No. 22 ....4.00
13-16 Nos. 13, 14 and 15 ....4.10
13-16, Nos. 16, 17 and 18 ....3.90
13-16, Nos. 19 and 20 ....4.00
13-16, No. 21 ....4.10
13-16, No. 22 ....4.20
¾, Nos. 13, 14 and 15 ....4.30
¾, Nos. 16, 17 and 18 ....4.00
¾, Nos. 19 and 20 ....4.10
¾, No. 21 ....4.20
¾, No. 22 ....4.30
11-16, Nos. 13, 14 and 15 ....4.40
11-16, Nos. 16, 17 and 18 ....4.20
11-16, Nos. 19 and 20 ....4.30
11-16, No. 21 ....4.40
11-16, No. 22 ....4.50
⅝, Nos. 13, 14 and 15 ....4.60
⅝, Nos. 16, 17 and 18 ....4.40
⅝, Nos. 19 and 20 ....4.50
⅝, No. 21 ....4.60
⅝, No. 22 ....4.70
⅝, No. 23 ....4.80
9-16, Nos. 13, 14 and 15 ....4.90
9-16, Nos. 16, 17 and 18 ....4.60
9-16, Nos. 19 and 20 ....4.70
9-16, No. 21 ....4.80
9-16, No. 22 ....4.90
9-16, No. 23 ....5.00
½ inch, Nos. 13, 14 and 15 ....5.10
½ " Nos. 16, 17 and 18 ....4.80
½ " Nos. 19 and 20 ....4.90
½ " No. 21 ....5.10
½ " No. 22 ....5.20
½ " No. 23 ....5.30

The prices under Hoop Iron do not apply to Cotton Ties.

1-10c per lb. extra will be charged for each gauge lighter than the lightest indicated.

1-10c per lb. extra will be charged for cutting Hoops to specified lengths.

Barrel Hoops.
1¼ to 2 in., cut to length.
9 to 11 lbs, per set of 6 hoops 3.50
8 lbs. and less than 9 lbs. per set of 6 hoops 3.60
Less than lbs. per set of 6 hoops 3.80

Extras for Cutting to Length all Preceding Iron.
All Iron, including Tire 1.10c

Tank Iron.
No. 9 and heavier 3.30
Plow Slabs 3.50
" Wings 3.60

Sheet Iron.

	Common.	Charcoal.	Juniata.
No. 10 to 14	3.50	5.00	6.50
No. 15 to 17	3.80	5.30	6.80
No. 18 to 21	4.10	5.60	7.10
No. 22 to 24	4.30	5.80	7.30
No. 25 & 26	4.50	6.00	7.50
No. 27	4.70	6.20	7.70
No. 28	5.10	6.60	8.10

All sheets No. 18 and lighter, over 30 inches wide, not less than 2.10c extra.

Wood's Patent Planished Sheet.
1st quality (A) ....10½c | 2d quality (B) ....9 c

Galvanized C. H. B.—(Charcoal Hammered Blooms.
Nos. 14 to 20 ....12c | No. 27 ....15c
Nos. 21 to 24 ....13c | No. 28 ....16c
Nos. 25 and 26 ....14c | No. 29 ....18c
42½ @ 45 % discount.

Coal Screen Iron.
1¼ by ⅝ by 5-16 ....3.00 | 1 by ⅝ by 5-16 ....3.50

Angle Iron.
2½, 3, 3½ and inch 3.30
1⅞, 1⅞ 2 and 2¼ inch 3.30
1¼ inch 3.40
1 " 3.60
1½ by 1 inch, for Plow Handles 3.80
1½ by ¾ " " 3.80
1⅜ by ⅝ " " 3.90

T Rail.
8 lbs. to the yard ....2.90 | 20 lbs. to the yard 2.80
12 " " ....2.80 | 28 ....2.80
16 " " ....2.80 | 30 ....2.80
Splice Joints for 12, 16 and 20-lb. Rail, 40c each; 28 and 30 lb. Rail, 50c each; 40 lb., 60c each.
3½ by ⅝ and ½ Spikes for 20 and 28-lb. Rail 4½c
2½ and 3 by ⅝ " " 12 and 16-lb. " 4¾c
2⅛ by 5 16 " " 8-lb. Rail 5¼c

Flat Rails.—Punched and Countersunk.
1½ to 2 by ½ to ⅝ inch 3.00
1⅛ by ⅜ and 7-16 inch 3.20
1¼ by ⅜, 7-16 and ½ inch 3.50

Juniata Nail Rods 6.50
Norway 8.00
Guard Iron, ¾x¾x⅝ and ⅞x⅞x⅝ 4.00
" ⅝x⅝x9-16 and ⅞x⅞x½ 4.20
Drag Bars 3.30
Dropper Bars 3.60
Cylinder and Landside Iron 3.20
Plow Beam Iron 3.00

Nails.
See Pittsburgh Trade Report.

Best Quality Refined Cast Steel.

Square, Flat, Octagon and Round.
⅜ to 2 inches, inclusive 11c
1-16 and 2⅛ to 3 inches 12c
¼ and 3⅛ to 4 " 13c
7-32 and 4⅛ to 5 " 14c
3-16 and 5⅛ to 6 " 17c
5-32 inch 22c
⅛ inch 30c
Oil Well Steel Forgings 20c

Machinery Steel.

	Crucible.	Bessemer & Open Hearth
Ordinary Sizes, ⅜ to 2 inch Round	7c	9c
5-16 and 2⅛ to 3 inches	8c	6c
¼ and 3⅛ to 6 "	9c	7c
7-32 inch	10c	8c
3-16 "	12c	10c

Square, Flat and Octagon, ½c extra throughout the list.
Cut to specified lengths, ½c extra.

Hammer Cast Steel.
Crucible Cast Steel 8½c
Open Hearth Cast Steel 7c

Sheet Steel.—Crucible.

	Best.	2d Qual.	3d Qual.	Bessemer & Open Hearth.
To 21 gauge	12c	11c	9c	7c

1c. extra for each additional gauge.
Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.
Auger and Auger Bit 8½c
Axle Steel for carriages and wagons 8½c
Frog Points and Plates 10c
" Side Bars 8½c
Pick, plain (hammered) 10c
" and Mattock, beveled (rolled) 8½c
Skate Steel 9c
Table Cutlery, plain 7c
Table Cutlery, beveled 7½c
Pike and Cant Hook 8½c
Coal and Granite Wedge 8½c
Roller 8½c
Spindle, subject to Machinery classification 8½c
Trap Spring Steel 10c
Forged Crank Pins and Lathe Spindles 10c
Piston Rods, plain 8½c
" forged to shapes 11c
Slide Bars, plain 8½c
" forged to shapes 11c

Crucible, Open Hearth or Bessemer.
Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick 6½c
Boiler, Fire-Box and Flue Sheets, not less than ⅛ thick 7½c
Circulars and semi-circulars, when ordered separately 8c
Smoke Stack, to shape 8c
Locomotive Tank Steel 7c

File Cast Steel.
Square, Round, Half Round and Flat Bastard, 8-inch and over 8c
Mill Saw, 8-inch and over 8½c
Taper, 3½-inch and over 9½c
Horse and Shoe Rasp 8½c

Spring Cast Steel.
Spiral and Taper, cut to lengths ....6½c / 7c

Tire Cast Steel.
1x½ and over 8½c
1x3-16, ⅞x3-16 and ½ 9c
1 and 13-16x½ and 5-32, ¾x3-16 and 5-32 ....9½c
¾ and ⅝x½ and 3-32 and 12 g 10c
Solid Safe Cast Steel 7½c
Three and Five Ply Cast Steel 10c

Agricultural Implement Cast Steel.
Fork and Rake, Crucible 8c
Horse Rake Steel, cut to lengths, Crucible 8c
Hoe, Crucible 7½c
Corn Stalk Cutter, beveled 9½c
Beveled Hoe and Shovel Steel in Bars 8½c
Crucible Plow Steel in slabs 6½c

Bessemer and Open Hearth.
Spring 4½c
" spiral and taper, cut to lengths 5½c
Tire, 3-16 thick and above 4½c
Toe Calk 4½c
Plow 4½c
Axle Billets 4c
Sleigh Shoe 4c
Cutter Shoe, cut to lengths and tapered 5½c
Scythe Back Steel 4c
Grain Drill Bars 7½c
" Points 8½c
Rolling Coulter Blanks, cut and punched 9½c
Thrasher Steel 4½c
" Teeth 5½c
Rolled Hammer Billets 4½c
Terms.—Four months; 2 per cent. discount for cash, if remitted within 30 days.

Rolls and Castings.
Furnace Floor and Straightening Plates ....3 c
Housings and Castings not otherwise specified ....3 c
Guide Plates 3½c
Spindles and coupling boxes ....3 c
Sand Rolls and Pinions, large size ....3 c
" small size 3½c
Pipe Mill Castings ....5 c
Rolling Mill Castings under 50 lbs ....4 c
Spur and Bevel Wheels, large ....4 c
" " small 4½c
Pulleys up to 30 inches 4½c
" over 30 inches ....4 c
Engine Castings, light 4½c
" " heavy ....4 c

Chilled Rolls.
6 to in. diam.. to 20 in. long 5c
8 to 15 in. " 8 to 40 in. " 4½c
25 to 24 in. " 15 to 72 in. " 4¼c
14 to 31 in. 72 to 108 in. " 4¼c
After Oct. 1, 1881, no discounts will be made at settlement as heretofore, prices quoted being net.

White and Red Lead.
Strictly Pure White Lead in Oil, in kegs, 6¼c.; in 25 lb Tin Pails, ½c. ₩ lb over keg price; 12½ lb Tin Pails, 1c ₩ lb over keg price; assorted, 1 to 5 lb cans, 3c. per lb over keg price.
Dry White Lead in barrels 6¼c
Red Lead, very brilliant, in kegs, 6½c; in barrels 6¼c
Litharge (Potter's Lead) " 6½c; " 6¼c
Freights equalized with all points where White Lead is made.
Terms: Note at sixty days, or if paid within 15 days from date of invoice a discount of 2½ per cent. will be allowed, but not otherwise.

Window Glass.
Discount, 70 % on Single Strength, 70 & 10 % on Double.

Size.	AA.	A.	B.	C.
Single Strength.				
6 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	8.50
26 x 28 to 24 x 36	13.00	11.50	9.75	9.00
26 x 36 to 26 x 44	14.50	13.25	10.75	9.50
26 x 46 to 30 x 50	15.00	14.00	11.25	10.50
30 x 52 to 30 x 54	16.00	14.50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	
Double Strength.				
6 x 8 to 10 x 15	12.75	11.75	10.75	10.00
11 x 14 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 20 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 50 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.

Hubbard, Bakewell & Co.'s Goods.
Axes, Single Bit, Lippincott ....Per doz. $8.00
" " James & Co .... " 7.00
" Double Bit, Lippincott .... " 15.00
" " James & Co .... " 12.00
Drain Tools, list ....dis 20%
Hoes, Planters' ....dis 55%
" Scovill Pattern ....dis 55%
" Handled, Square Eye, German ....dis 25%
Handles, Cross Cut ....Per doz. $3.50
" Shovel, Bent, Bored, Riveted .. " 2.50
Saws, Circular ....dis 45%
" Long ....dis 40%
" Cross Cut, H. B. & Co., Champion, Per ft. net $0.35
" Cross Cut, Lippincott, Champion, Per ft. net 30
Shovels, list ....dis 20%
Spades, " ....dis 20%
Scoops, " ....dis 20%

BOSTON.

Reported by Macomber, Bigelow & Dowse.

Anvil & Vise.—
No. 1, $5.25; 2, 4.25; 3, 3.50 each ..... dis 25 %

Augurs & Bitts.—Snell's Auger ..... dis 40&10 %
L'Hommedieu's Ship Auger ..... dis 25 %
Jenning's Bitts ..... dis 10&10&10 %
Cook's Bitts ..... dis 40&10 %
Shepardson's Double-Cut Bitts ..... dis 45 %
Shepardson's Double Gimlets ..... dis 40 %
Stearn's Extension Hollow Augers—
No. 2, ₩ doz., $48.00; No. 3, ₩ doz., $60.00 list dis 20 %
Bonney's Extension Hollow Augers ..... ₩ doz $36.00
Pierce's Bitts ..... dis 50 %
Griswold Bitts ..... dis 60 %

Axes.—Blue Jackets ..... ₩ doz $9.00
Red Cross ..... ₩ doz 8.00
Red Cross Handled ..... ₩ doz 12.00
Dowse Handled Boys' ..... dis 33⅓ %

Ax Handles.—
Oak Extra, 31 in., No. A ..... ₩ doz $2.50
Oak Extra, 34 in., No. A ..... ₩ doz 2.50
Oak Extra, 31 in., No. B ..... ₩ doz 2.00
Oak Extra, 34 in., No. B ..... ₩ doz 2.00
Oak Extra, 31 or 34 in., No. C ..... ₩ doz 1.40

Axle Clips ..... dis 50 %
Balances.—Chatillon's ..... dis 33⅓ %

Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers) ..... ₩ ft. 20
Cast Half Round ..... ₩ ft., ⅝, 30; ¾, 40
Wrought Round ..... ₩ ft., ⅝, 30; ¾, 40; ⅞, 50

Bells.—Connel's Crank Gong, reduced list.. dis 15&10 %

Bird Cages.—
Japanned M. B. & D., reduced list, 1879 ..... dis 40 %
Brass M. B. & D., reduced list 1879 ..... dis 33⅓ %

Blind Fasts.—Lock Fasts ..... ₩ C sets $6.00
No. 6 Fasts ..... ₩ C sets 6.00
Vearle Fasts ..... ₩ C sets 6.00
Shedd's ..... ₩ C sets 7.00

Blind Hinges.—Mall, Hook, 3 holes ..... ₩ C sets 7.00

Brad Awl Handles.—
Phœnix Adjustable ..... ₩ doz $2.00

Bolts.—Norway Iron Carriage ..... dis 75 %
Common Iron Carriage ..... dis 50 & 10 %

Borax.—Refined ..... ₩ lb 14c

Boring Machines.—
Eagle Upright each ..... $4.50 list } dis 40&10 %
Eagle Angle each ..... 6.75 list }
Snell Augers ..... ₩ set $2.45

Braces.—Barber's ..... dis 40&5 %
Spofford's ..... dis 10&5 %
Backus' ..... dis 60&5%

Bracket Saws.—Holly Scroll Saw ..... each $2.25
Demas Lathe and Scroll Saw ..... each 6.50
Bracket Saws, extra quality, 1 to No. 5 ..... ₩ gro 0.75
Steel Frame, with patterns ..... ₩ doz 6.50
Lester ..... dis 20 %
New Rogers, all iron ..... dis 25 %

Bracket Saw Blades.—Griffith's pat ..... ₩ gross 75c

Brackets.—
H. B. & M. Flower Pot, reduced list ..... dis 15&10 %
Bronzed Shelf, M. B. & D., new list ..... dis 50 %
Store Shelf ..... dis 40 %

Butts.—Union Fast Joint ..... dis 15&10 %
Union Loose Joint ..... dis 15&10 %
Union Japanned Acorn ..... dis 15&10 %
Union Silvered Acorn ..... dis 15&10 %
Union Boston Finish ..... dis 70&10 %
Union Spiral Spring ..... dis 25&10 %
Wrought Brass ..... dis 60& 10%

Carriage Bolts.—Eagle Norway ..... dis 70&10 %
Common ..... dis 80 & 5 %

Carriage Jacks.—Climax No. 1 ..... ₩ doz $20.00
Climax No. 1½ ..... ₩ doz 15.00
Climax No 2 ..... ₩ doz 13.50
Universal ..... dis 25 %
Universal No. 1 ..... each, $2.00
Universal No. 2 ..... each 3.00
Universal No. 3 ..... each 6.00
Universal No. 4 ..... each 6.00
Universal No. 4 ..... each 6.50

Cartridges.—U. S. Cartridge Co ..... dis 75 %

Cards.—
Watson's make Horse & Curry ..... dis 10 % } New List,
Watson's Cotton ..... dis 10 % } July, 1881.
Watson's Wool ..... dis 10 % }

Casters.—Bed and Table ..... dis 50 %

Chain.—Traces 6⅛, 10, 4, straight ..... ₩ pair 40c
Traces 6⅛, 10, 4, twisted ..... ₩ pair 55c
Traces 7, 12, 2, twisted ..... ₩ pair 80c
Coil 3-16 ..... ₩ lb 10½c
Coil ¼ ..... ₩ lb 8½c
Coil 5-16 ..... ₩ lb 7c
Coil ⅜ ..... ₩ lb 6½c
Coil 7-16 ..... ₩ lb 6c
Coil ½ ..... ₩ lb 5¾c

Chalk.—White, Carpenter's ..... ₩ gross 50c
Red, Carpenter's ..... ₩ gross 80c
Blue, Carpenter's ..... ₩ gross $1.00

Chisels.—Hart, Blivens & Mead, Framing .. dis 60&10%
Underhill, Framing ..... dis 25 %
Buck's Chisels ..... dis 30 %

Clothes Line.—
Galvanized Wire, 100 feet each ..... ₩ doz $4.00

Coal Hods.—"Dover."—Galvanized, New List. dis 50%
Japanned, new list ..... dis 60 %

Coffee Mills.—New List ..... dis 25 %

Copper Rivets ..... dis 40 %

Cow Ties ..... dis 33⅓ %
No. 30, 3 ft. No. 6 Wire, with toggle ..... ₩ doz $3.80
No. 35, 3 ft. No. 6 Wire, with snap ..... ₩ doz 4.00
No. 40, 3½ feet No. 6 Wire, with toggle ..... ₩ doz 4.30
No. 45, 3½ ft. No. 6 Wire, with snap ..... ₩ doz 4.40
No. 50, 4 ft. No. 4 Wire, with toggle ..... ₩ doz 4.75
No. 55, 4 ft. No. 4 Wire, with snap ..... ₩ doz 5.00
No. 60, 4¼ ft. No. 3 Wire, with toggle ..... ₩ doz 5.60
No. 65, 4½ ft. No. 3 Wire, with snap ..... ₩ doz 5.80

Cocks.—Brass. L. F. & Co ..... dis 40&10 %

Cordage.—Manila, usual trade dis 10 ..... ₩ lb 15½c
Jute ..... ₩ lb 9c

Crow Bars.—Cast Steel ..... ₩ lb 7½ c
Iron Steel-pointed ..... ₩ lb 6c

Cutlery.—Pocket American Shear Co.'s ..... dis 40 %
Butcher Knives, Wood's, Lap Bolster, Square Handle ..... dis 30 %
Steak Knives ..... dis 25 %
Lap Bolster, Oval Handle ..... dis 20 %
Sticking ..... dis 20 %
Skinning ..... dis 30 %
Butcher, Common Round Handle, Wood's ..... dis 20 %
Shoe Knives, Wood's ..... dis 20 %

Dividers.—Cook's ..... dis 25 %

Dog Collars ..... dis 20 %

Door Springs.—Torrey's Rod ..... ₩ doz $1.62
Imitation Torrey's Rod ..... ₩ doz 1.45
Gem Coil, new list ..... dis 50 & 10 %
Crown ..... ₩ doz 1.25
Warner's ..... ₩ doz 2.00

Door Stops.—Thurston's ..... dis 50 %

Drawer Knobs.—Thurston's ..... dis 50 %

Drills.—Morse Bitt Stock ..... dis 25 %
Morse Straight Shank ..... dis 20 %

Emery.—Wellington Mills ..... ₩ lb 10c
Walpole Emery Mills ..... ₩ lb 6c
Turkish in 10 lb cans ..... ₩ lb 8c

Enameled Ware.—
Standard Mfg. Co. Kettles ..... dis 40 & 10 %
Standard Sauce Pans ..... dis 30 %

Felloe Plates.—Wrought ..... ₩ lb

Files.—American File Co ..... dis 50 %
Nicholson File Co ..... dis 50 %

Fluting Machines.—Knox list, $4.00 ..... dis 20 %
American list, $3.40 ..... dis 20 %

Forks.—W. C. & Co., Manure ..... dis 50 %

Gimlet Bits.—
Genuine German, No. 125, 1-32 to 8-32, per doz $1.00
Pierce's ..... per doz .88

Glass Cutters.—Combination Glass Cutter and Knife Sharpener ..... ₩ doz $1.00

Grub Hoes.—K. P. & Co.'s No. 2, $11.50 ₩ doz. dis 40 %

Hammers.—Maydole's ..... dis 15 %
Hartford Hammer Co ..... dis 20 %

Hangers & Rollers.—Anti-Friction ..... dis 50 %
Acme Rollers ..... dis 50 %
Climax ..... dis 50 %
Common Hangers ..... dis 50 %
Common Rollers ..... dis 50 %

Hand Screws ..... dis 10 %

Hatchets.—C. F. Dowse new list ..... dis 33⅓ %
Underhill ..... dis 30 %

Hay Knives.—Lightning ..... ₩ doz. $18.00, net
Fisher's Patent ..... ₩ doz $14.00

Hinges.—Strap and T (new list) ..... dis 50 %
Providence Plate ..... ₩ lb 5 %
Wrought Screw Hook ..... ₩ lb 5 %

Hoes.—W. C. & Co.'s ..... dis 50

Hooks and Staples.—Brewers' (new list) .... dis 50

Horse Nails ..... No. 6 7 8 9
National Finished ..... .23 .21 .20 .19 .... dis 20 %
Putnam Pointed ..... .24 .22 .21 .20 ..... c %
Bridgewater ..... .21 .19 .18 .17 ..... list

Ice Cream Freezers.—Packer's, new list, ... dis 50 %

Knobs.—"Norwalk." New list ..... dis 45 %
Silver Glass ..... dis 50&10 %
Silver Glass Bell Pulls ..... dis 50&10 %

Lanterns.—Tubulars, No. 0 ..... ₩ doz 8.00
Railroad, Oil, No. 43 ..... ₩ doz 9.00
Triangular ..... ₩ doz 4.00

Lawn Mowers.—The "Daisy."
12 in. cut ..... each, $8.00
14 in. cut ..... each 8.50
16 in. cut ..... each, 9.00
18 in. cut ..... each, 9.50

Lead.—Sheet ..... ₩ lb 7½c
Pipe ..... ₩ lb 08½c

Locks.—Norwalk ..... dis 45 %
Eagle Cabinet ..... dis 25 %
Eagle Trunk ..... dis 15 %
W. Wilcox & Co., Padlocks ..... dis 30 %

Manure Forks.—W. C. & Co ..... dis 60 %

Mattocks.—
K. P. & Co., Long Cutter, $15.00 ₩ doz ..... dis 50 %
K. P. & Co., Short Cutter, $15.50 ₩ doz ..... dis 50 %
K. P. & Co., Pick Cutter, $16.00 ₩ doz ..... dis 50 %

Measuring Tapes.—Eddy's ..... dis 20 %

Meat Cutters.—Miles' Challenge ..... dis 30 %
Hale's, (new list) ..... dis 40 & 10 %
American ..... dis 25 %

Money Drawers.—Tucker lar's Am ..... ₩ doz $22.50

Mouse Traps.—Delusion ..... ₩ doz 1.40
Novelty ..... ₩ doz

Nails ..... ₩ keg 3.40

Oilers.—Zinc and Tin ..... dis 60 %
Brass and Copper ..... dis 50 %

Ox Bows.—Extra finished and varnished ..... dis 10 %
1⅝ in., ₩ doz. pair ... $7.00 | 2 in., ₩ doz. pair, $10.00
1¾ in., ₩ doz. pair ... 9.00 | 2½ in., ₩ doz. pair . 12 00

Paper.—Tarred Sheathing ..... ₩ lb 2½c
Tarred Eagle Brand ..... ₩ lb 2½c

Picks.—K. P. & Co., Adze Eye, 4 to 5 lb $12.00 ..... dis 50 %
K. P. & Co., Adze Eye, 6 to 7 lb $13.00 ..... dis 50 %

Planes.—
Fancy Planes ..... dis 15 %
Razee Planes ..... dis 20 %
N. Y. Tool Co ..... dis 25 %
English Iron ..... dis 20 %
Bailey's ..... dis 20&10 %

Plated Ware.—Rogers & Bro ..... dis 40&5 %

Pliers.—Vom Cleff & Co.'s ..... net list
Button's Wire Pliers ..... dis 33⅓ %

Plumb & Levels.—Stanley R. & L. Co ... dis 65&10 %

Pocket Knives.—American Shear Co.'s ..... dis 40 %

Potato Diggers.—W. C. & Co., reduced list .. dis 60 %

Pulleys.—Acme or Excelsior, 1¾ in ..... ₩ doz 24c
Acme or Excelsior, 2 in ..... ₩ doz 27c

Pulley Blocks ..... dis 35 %

Pumps.—Union Manufacturing Co.
Iron Cistern ..... dis 40 %
Iron Pitcher Spout ..... dis 55 %
Copper ..... dis 30 %

Rivets.—Black (new list) ..... dis 40 %
Carriage in 10 lb papers (new list) ..... dis 40 %
Copper ..... dis 33⅓ %

Razors.—Torrey's ..... dis 20 %

Razor Straps.—Torrey's ..... Full line

Rules.—Stanley, Boxwood ..... dis 70 &10 %
Stanley, Ivory ..... dis 55&10 %

Sad Irons.—Common ..... ₩ lb 3½c
Laundry ..... ₩ lb 0½c
Tailors' Geese ..... ₩ lb 6 c
Enterprise, "Potts'" ..... dis 35 %

Sash Locks.—King & Hutchinson's, new list dis 40 %

Sandpaper.—Baeder & Adamson ..... dis 30 %
M. B. & D ..... dis 15 %

Sash Weights.—Patent Eye ..... ₩ lb 1½c

Saws.—Hand Saws, Disston's ..... dis 20 %
Wheeler & Clemson ..... dis 20 %

Cross-Cut Saws.
W. M. & Co., Common Tooth, No. 1 ..... ₩ foot 35c
W. M. & Co., Champion Tooth ..... ₩ foot 35c
Disston's, Common Tooth ..... ₩ foot 66c dis 40 %
Disston's Great American Tooth ... ₩ foot 68c dis 40 %
Boynton's Lightning Tooth ..... ₩ foot 45c
M. B. & D., Hand Saws ..... dis 33⅓ %
W. M. & Co.'s Circular Saws ..... dis 35 %
Richardson Bros. ..... dis 25 %

Saw Blades.—Disston ..... dis 20 %
W. M. & C ..... dis 10 %
Welch & Griffith, Extra ..... ₩ doz $8.40
Welch & Griffith, No. 2 ..... ₩ doz 7.00

Scales.—Fairbanks ..... dis 20 %

Screws.—Aiken's Flat-Head Iron new list, dis 50 & 10 %
American Flat-Head Iron ..... new list, dis 50 & 10 %
American Flat-Head Brass ..... new list, dis 50 & 10 %
American Round-Head Brass ... new list, dis 40 & 10 %
American Round-Head Iron .... new list, dis 45 & 10 %
Grilley Round Head Nickel-Plated Common .. dis 40 %

Scythes.—Clippers, in boxes ..... ₩ doz 86.75

Shaves.—Kimball's ..... ₩ inch 75c
Watrous ..... dis 15 %

Shears.—American shear Co., new list ..... dis 70 %

Shot.—Tatham's ..... ₩ lb 7c

Shovels.—O. Ames, new list ..... dis 15 %
O. Ames, other brands, new list ..... dis 15 %
M. B. & D ..... dis 15 %

Sinks.—Magee Patent ..... dis 30 %

Snow Shovels $4.00

Skates.—Union ..... dis 25 %
Acme ..... dis 25 %
Imperial Club list No. 5, $3.75 ₩ pair · list No. 7, $6.00 ₩ pair ..... dis 25%

Stocks and Dies.—King's ..... dis 10&5 %

Tacks.
Swedes Tinned ..... dis 30&10 %
Swedes Iron ..... dis 30 & 10 %
Gimp and Lace ..... dis 20 & 10 %
Copper Tacks ..... dis 30 & 10 %
All balances on list ..... dis 20&10 %

Traps.—Oneida, Genuine ..... dis 33⅓ %
Oneida, Imitation, H. & N ..... dis 50 %
Blake's ..... dis 40&10 %

Vises.—Simpson's Adjustable ..... dis 25&5 %
Howard Vise Co ..... dis 25 %
Prentiss' ..... dis 20 %

Weather Strips.—Packer's ..... ₩ doz $4.50
Browne's Flexible Rubber ..... dis 30 %
In 25 feet boxes: No. 1, ⅛ in. wide, ₩ yard, 10c.; No. 2, ⅜ in., 14c.; No. 3, ⅝ in., 20c.; No. 4, 1 in. 24c
Black Walnut Spring Weather Strips ..... ₩ doz $1.50

Window Springs ..... dis 33⅓ %
Babcock's No. 3 ..... ₩ gross $6.75
Babcock's No. 4 ..... ₩ gross 4.15

Wire Cloth.—"Clinton" ..... ₩ ft

Wire Fence.—Scutt's Patent, Painted ..... ₩ lb 7½c
Scutt's Patent, Galvanized ..... ₩ lb 8½c

Wire Goods.—Gate Hooks and Eyes, &c., dis 55&10 %

Wrenches.—A. G. Coe's ..... dis 50 %
Girard Mfg. Co ..... dis 50 & 10 %
Girard Agt. ..... dis 60 & 10 %

Wringers.—
Novelty No 2 for Common Tubs ..... ₩ doz 42.00
Novelty " 3 " " " " ..... ₩ doz 48.00
Excelsior E " Stationary Tubs ..... ₩ doz 51.00
Excelsior F " " " ..... ₩ doz 57.00
Excelsior A with Folding Bench ..... ₩ doz 49.00
Excelsior B " " " ..... ₩ doz 63.00

$3.00 per doz dis if ordered in not less than 1 doz lots, and $⅗ per doz dis if ordered in not less than 5 doz lots.

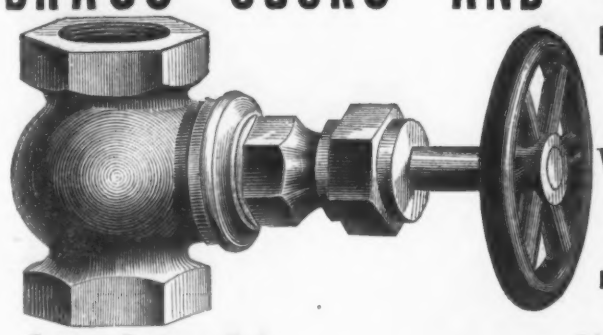
Novelty Set Tub, E ..... ₩ doz 40.00
Keystone, Wood Frame No 1½ ..... ₩ doz 39.00
Keystone, Iron Frame No 2½ ..... ₩ doz 47.00

Zinc ..... ₩ lb 09c

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS AND VALVES,



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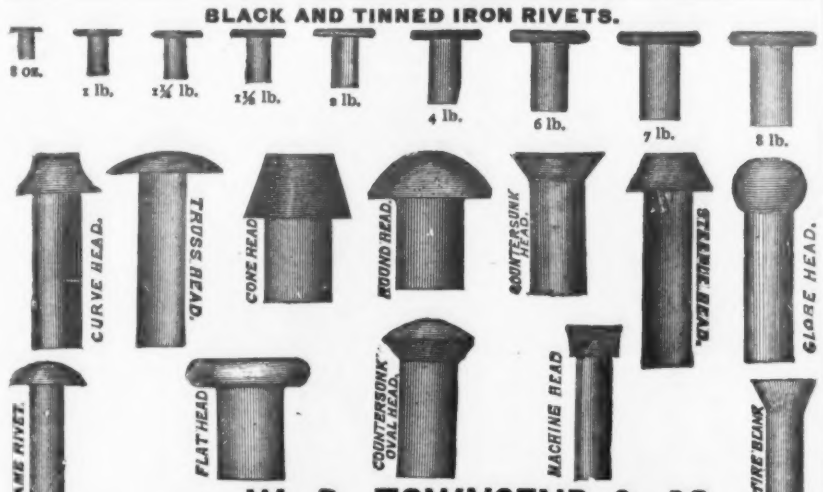

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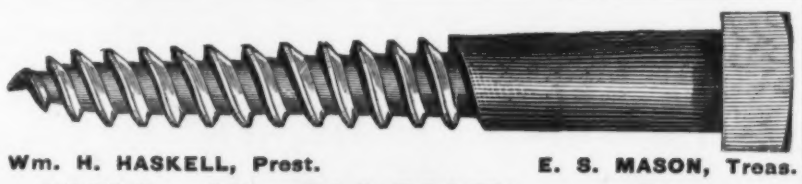

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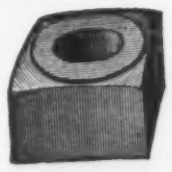

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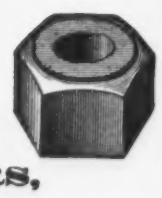

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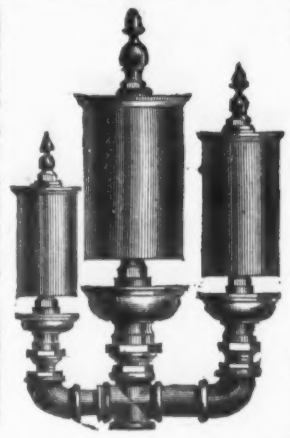

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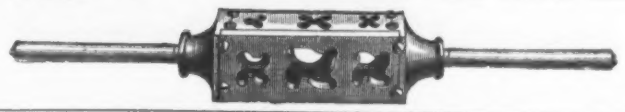

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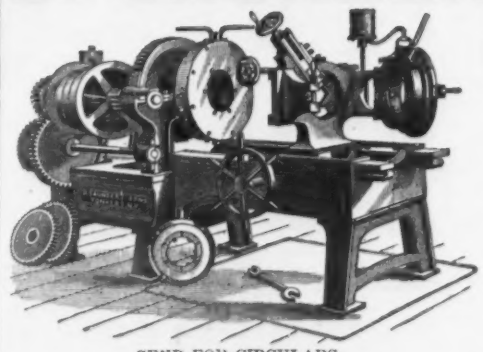

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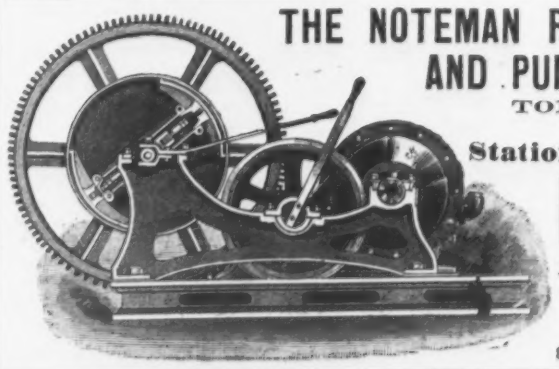

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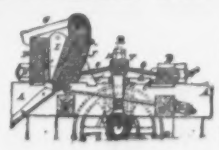

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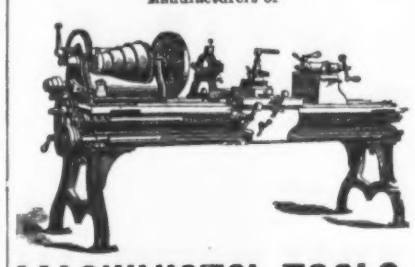

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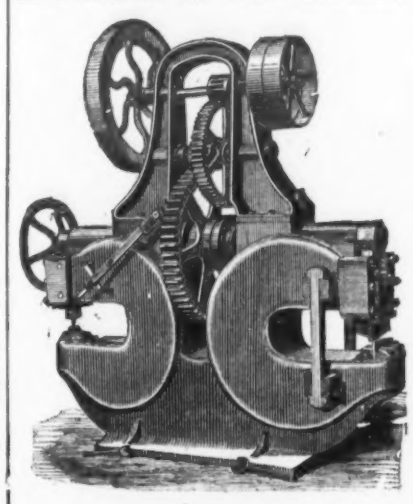

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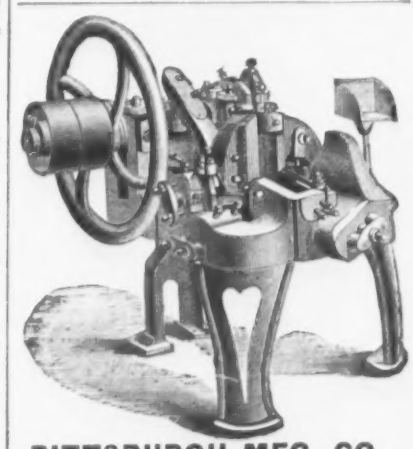

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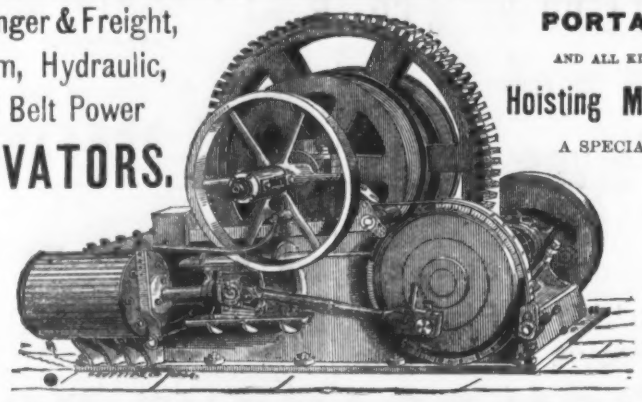

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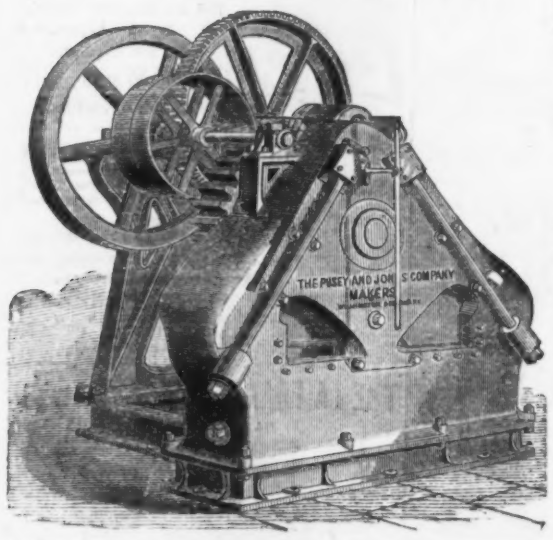

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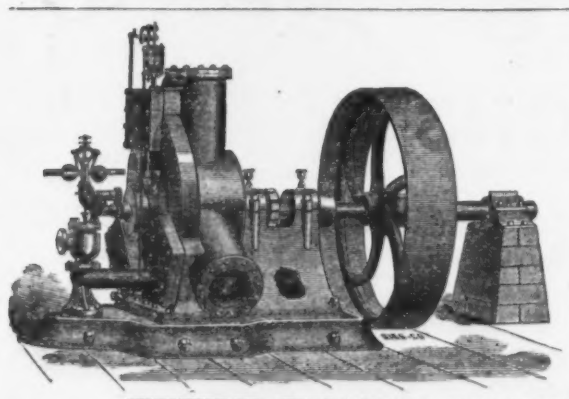

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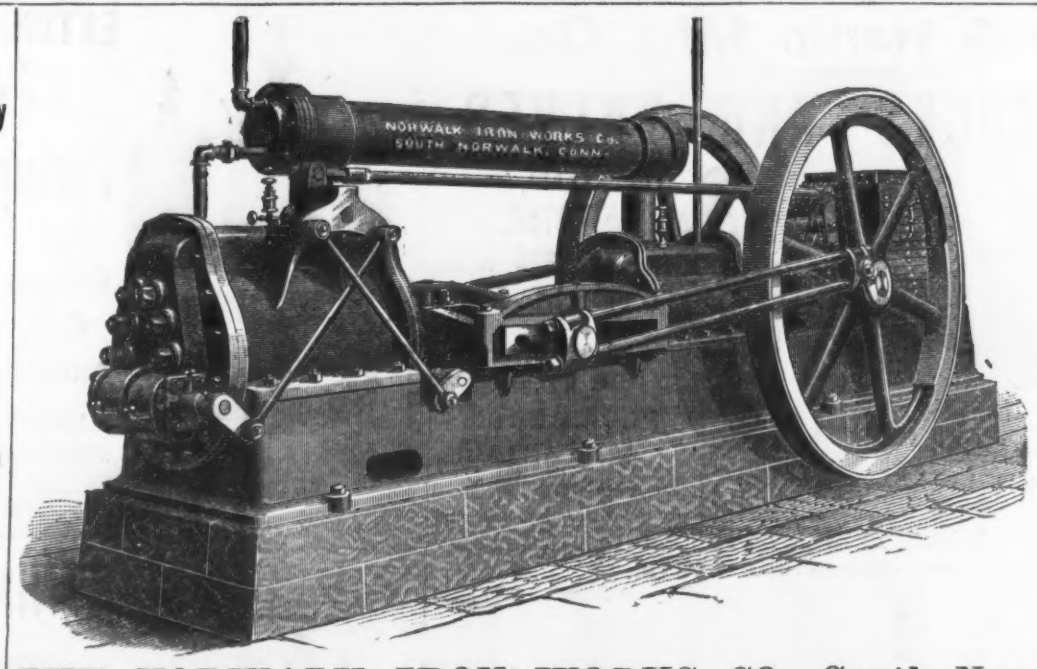

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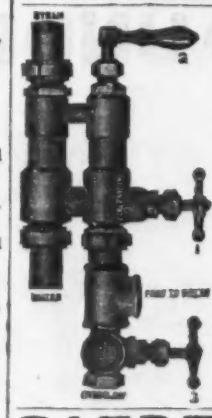

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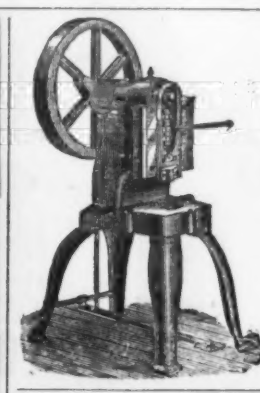

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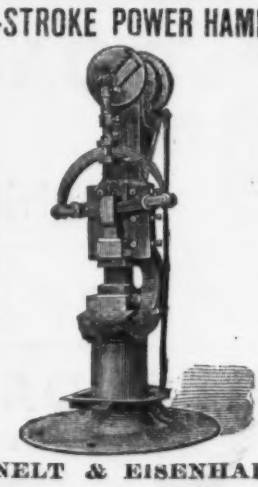

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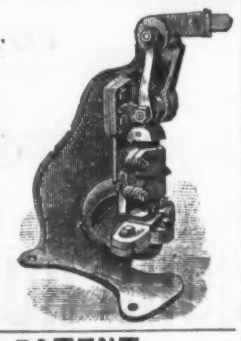

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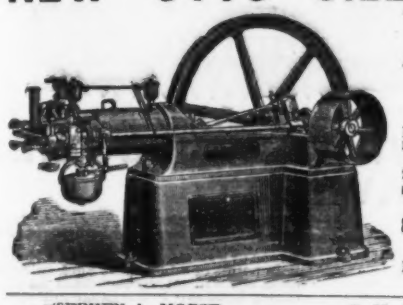

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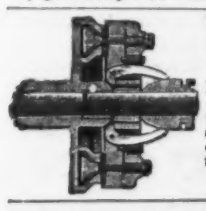

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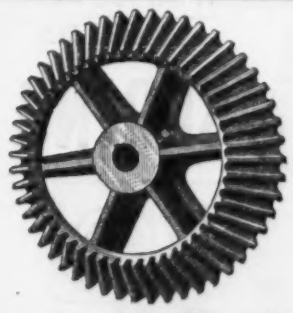

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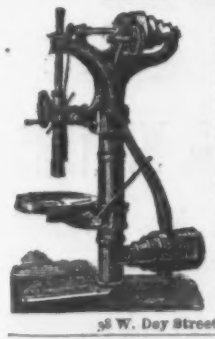

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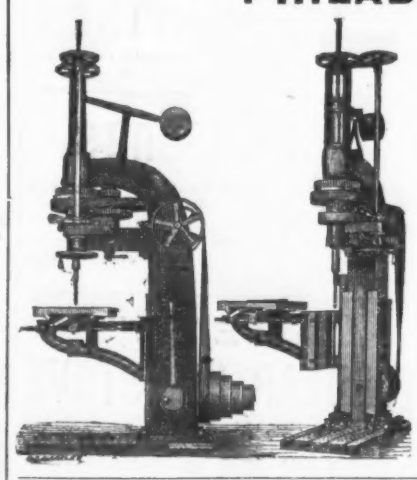

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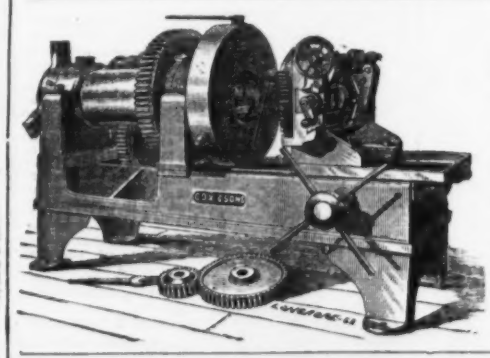

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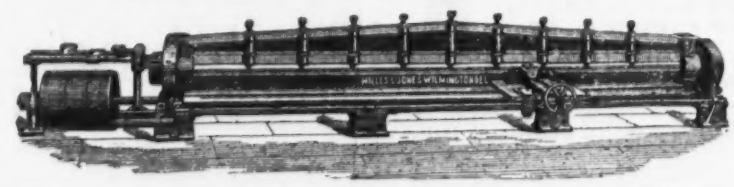

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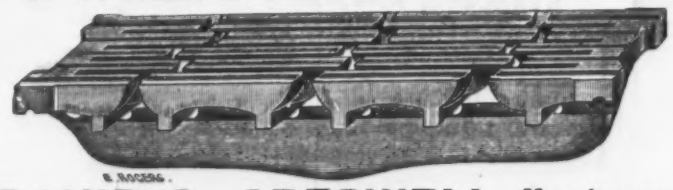

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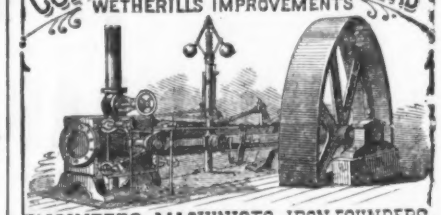

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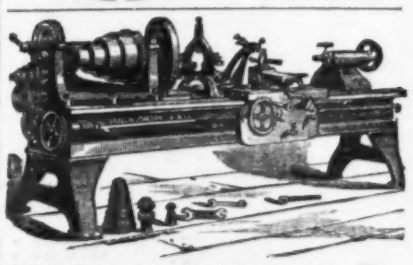

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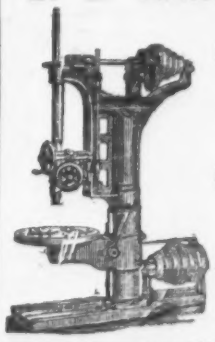

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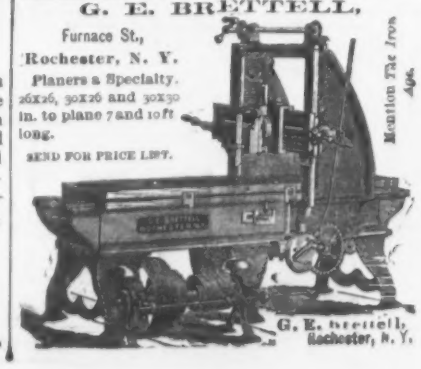

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